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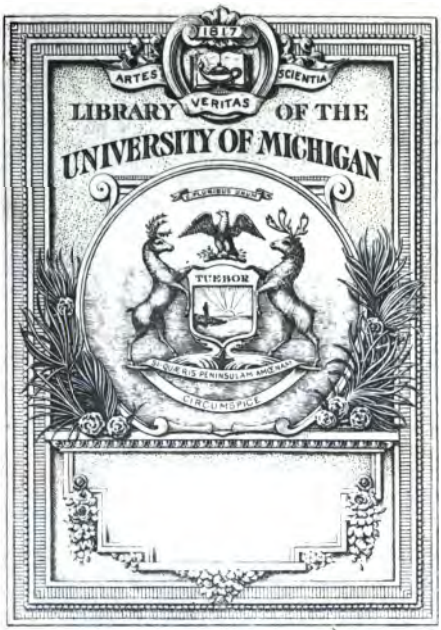
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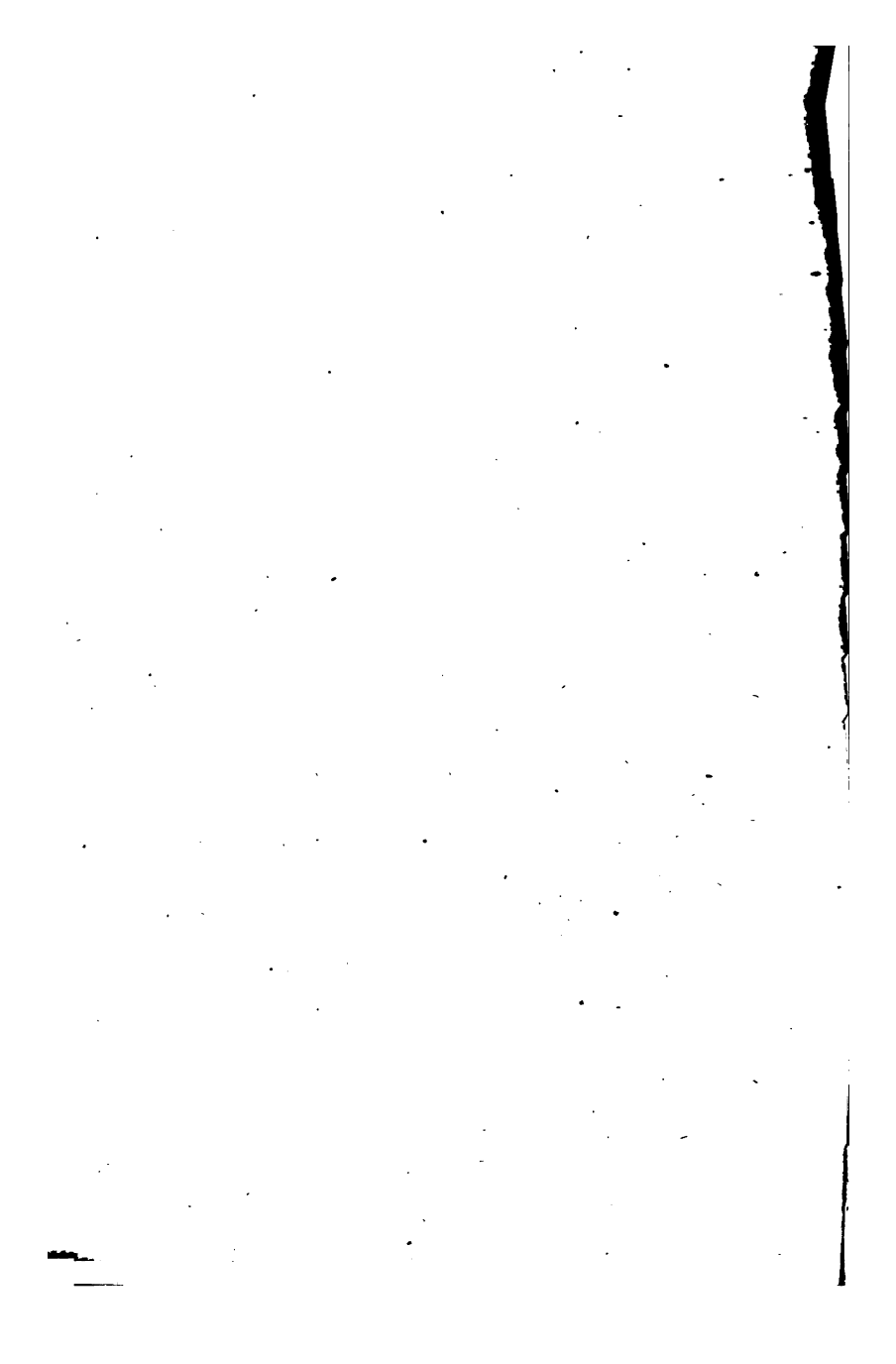

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Wale inv. et del. *T. Müller Sc.*

WOLVES ſhall ſucceed for Teachers, *grievous Wolves*,
Who all the SACRED MYSTERIES of Heav'n
To their own vile Advantages ſhall turn
Of *Lucre* and *Ambition*, and the *Truth*
With *Superſtition* and *Tradition* taint. —

MILTON, Par. loſt, B. 12. L. 508.

LONDON:
Printed for JOHN FULLER, in *Blow-Bladder Street*.
M.DCC.LXIV.

PREFACE.

Hist. Jaci. Brucia 9-11-31 24597

To the READER.

To Worth *there is a* Tribute *justly due;*
We cannot think *but we muſt* ſpeak *it too.*

BUT for the Aid of a noble-minded Perſon, whoſe HEROIC ACTIONS and high *Merit* have greatly aided this Nation, the PALLADIUM for 1764 had never exiſted. By whoſe bountiful and life-giving Hand, dejected Widows, helpleſs Orphans, poor Priſoners, and Others, *pining in Diſtreſs*, have received ſuch timely Relief, that they owe their *Preſervation* to his Goodneſs of Diſpoſition, and Greatneſs of Mind. Who are all bound to pray for him and bleſs him *(for the Bleſſings they have received)* to their lateſt Breath!

To be TRULY BRAVE is *eſſential* to GLORY in the high Poſt of *Honour*; but when other *amiable* Qualities of *Prudence, Conduct, Benevolence, Humanity, Generoſity*, and *Juſtice*, are joined to complete the HERO, he is, at once, the DARLING of his Country, and the Delight of Mankind!

But, as great and worthy Men are *more delighted to do good Actions than to hear of them*, we ſhall avoid giving Offence to *Modeſty*, by forbearing to mention *Names*; while we offer a *living Character* as an Example worthy of Imitation.

Sorry we are to ſay, that we hardly find any among the *modern great Men*, who are Encouragers of *true and uſeful Science* —Who, in general, are too much devoted to *faſhionable Amuſements* to apply themſelves to *ſcientific* Improvements. Who think it a Reflection on modern *Taſte* and *Politeneſs* to court the Sciences. — Though we may obſerve, that Men of the firſt Rank and Genius, among the antient *Greeks* and *Romans*, equally cultivated *Arts and Arms*; and thought it no Diminution of Character to excel in both: When the Sciences were conſidered as Helps, inſtead of Hindrances, to *Skill and Acquirements in Arms*.

To the CONTRIBUTORS.

SINCE we find Science have ſo very few *Patrons* and *Encouragers*, and the Impreſſion of the *Palladium* to coſt more for Printing and Paper than it repays the *Bookſeller*, who is willing to propagate it without *Loſs to himſelf*, we therefore advertiſe the Contributors, that *we are under a Neceſſity* to raiſe the *Price* of each ſingle *Palladium* to 2*s*. in Order to repay the Expence of printing it; with what *private Subſcription and Encouragement* we have received this Year.

But if the Contributors are deſirous of having it *farther carried on*, at the ſame, or a *lower Price*, there will be no Means of effecting it, but by a *general Subſcription and Encouragement*;

ragement; whereby they may reduce or raiſe the Price as they pleaſe. To which End, each *Contributor* muſt ſubſcribe for as many *Palladiums* as they can diſpoſe of, at *Bookſeller's* Price; the leaſt Number to be ſubſcribed for to be *half a Dozen*, and thoſe who ſend many Productions to be inſerted not leſs than a *Dozen Palladiums*, and as many more as they pleaſe. Thoſe who give the greateſt Encouragement to be moſt obliged in having their fit Productions inſerted.

Every Subſcriber to the Palladium *for* 1765 *to depoſit his Money, for the Number of* Palladiums *ſubſcribed for, with Mr.* Cole, *Mathematical Inſtrument Maker, next the* Globe *Tavern,* Fleetſtreet, London, *before the End of* May, 1764, *where he will have a Receipt under the Author's own Hand for the ſame; obliging himſelf to return the Money at* Michaelmas, *or deliver the* New Palladiums *ſubſcribed for, as ſoon as publiſhed. The Author alſo requires, that each Contributor fails not to ſend all his Productions to the ſame Place by the ſame Time, at fartheſt, franked, or Poſt paid, in Order that he may know what he has to depend on, and have Time ſufficient allowed him to compoſe and adjuſt a new and uſeful* Palladium.

N. B. *Mathematical Maſters and Others may be ſupplied with every mathematical Inſtrument at the ſaid Mr.* Cole's, *made in the beſt Manner, and at the loweſt Prices.*

COPY *of the* RECEIPTS *left at Mr.* Cole's, Fleetſtreet, London, *to be delivered to Subſcribers to the* Palladium *for* 1765, *on the Payment of their Money for carrying on that future* WORK.

RECEIVED of Mr. the Sum of being his Subſcription for *New Palladiums* for the Year 1765. Which *Palladiums* the Author promiſes ſhall be delivered to each *Subſcriber*, at Bookſeller's Price, as ſoon as publiſhed; he applying to Mr. *Fuller*, in *Blowbladder-ſtreet*, for the ſame — or his *Money* to be returned on the Delivery of his Receipt given, at *Michaelmas* next, without Fail; and applying to the ſaid Mr. *Cole*, in Caſe a ſufficient Subſcription for carrying on the ſaid *Palladium* is not raiſed, of which *Notice* ſhall be given to each Subſcriber, giving the Place of his Abode.

Witneſs The AUTHOR's Name and Hand.

☞ *The Subſcribers in their Letters to the Author are deſired to fix the Price they would have each* Palladium *ſold at, with their Reaſons for the ſame; whether at* 1s. 6d. *or more, to be determined by the Majority. Who are to be allowed one fourth of the Price, for ſubſcribing, according to the Number they ſubſcribe for. — They are alſo deſired to ſubſcribe early, or by* Midſummer *next at fartheſt; that the Author may be ſure to know what Encouragement is given him for carrying on, and likewiſe the Book-*

ſeller, for fixing the Number to be printed, and for anſwering the Expence of the Work, as without ſuch Means there will be no more Palladiums. *The* Subſcribers *therefore are deſired to promote the Sale of this preſent* Palladium *as much as poſſible, to encourage the Bookſeller to continue the* WORK.

N. B. All future PALLADIUMS (beſides for the *Amuſement* of the *Ladies* and *Gentleman* at Land) will be *particularly adapted* for the Uſe of NAVIGATORS and GENTLEMEN at SEA; for which *Purpoſe* we have adapted the preſent *Palladium*, for 1764, as much as poſſible; according to our great ENCOURAGEMENT and HONOUR received from a SEA OFFICER of RANK and EXPERIENCE. — See *Pages towards the End.*

NEW ÆNIGMAS.

I. ÆNIGMA 136. *By Mr.* Joſeph Scott, *of* Cawthorn, Yorkſhire.

YE blooming *Fair* of Race divine,
In whom ſo many Virtues ſhine,
To you alone I make Addreſs,
By whom I'm favour'd with Acceſs;
Of all your fine Acoomplishments
I'm firſt acquir'd, with your Conſents;
And when at *Balls* you're bright array'd,
And Mirth and Muſic are diſplay'd,
You gracefully with me advance,
In ſprightly Steps, the *fav'rite Dance.*
Not to one Place I am confin'd,
My Duty's variouſly aſſign'd;
At *Church*, as Nature's ſelf directs,
I aid you in divine Reſpects:
The ſtubborn *Quak'reſs* me deſpiſe,
To attend on her would cauſe Surpriſe;
Take one Hint more, and then, no Doubt,
Without much Pains you'll find me out;
Whene'er for ſitting you prepare,
You ſympathiſe with me, ye *Fair.*

II. ÆNIGMA 137. *By Mr.* Scott.

GAY Son of Fancy, thee all *Pow'rs* obey,
I'm born beneath thy arbitrary Sway.
Thou reign'ſt o'er all; ſome gently feel thy Pow'r,
And ſome thy raging Tyrannies devour.
Father and Son of every human Life,
Beſt Spring of Peace, yet frequent Cauſe of Strife.
Thy Female-Fathers ev'ry where abound,
And thy Male-Mothers are as often found:

Thou

Thou greateſt Joy and Anguiſh of the Mind,
Art gently cruel, and tormenting kind.
Blind Iſſue of the Eyes, dark Child of Sight,
Day gives thee large Additions of Delight,
But ſtill thy Paradiſe, thy Heav'n is Night.

III. Ænigma 138. *By Mr.* John Swan, *at* Buxton *Free-School*, Derbyſhire.

HEAR me, fair *Ladies*, and I'll tell to you
A wond'rous Thing, though not entirely new;
I have two Bodies always join'd together,
Which ſerves for Uſe in fair or in foul Weather;
My Fabrick ſo tranſparent is and thin,
That all my *Entrails* may be ſeen within.
I oftentimes reſide among the Poor,
But ſeldom come within the rich Man's Door;
I'm always quiet, as I'm ſtanding ſtill,
Yet ſome Times vex my froward Maſter's Will.
Some Men I pleaſe, but others I cannot;
I'm true and falſe, ſo various is my Lot:
With you, fair Ladies, ſeldom I appear,
Yet hope to viſit you another Year.

IV. Ænigma 139. *By Mr.* John Clark.

YE lovely Fair, ere brilliant *Sol* was made,
Or the Foundation of this Globe was laid;
Ere the ſwift Lightning ſhot from Pole to Pole,
Or raging Billows o'er the Ocean rowl,
I claim my Being as an elder Brother;
For I'm as old perhaps as any other.
I walk'd with *Adam* in the lonely Bow'r,
Though *Scylla* and *Charybdis* own my Pow'r.
I make a Viſit to the *Paphian* Queen,
And oft beyond the *Ganges* I am ſeen.
Each Tow'r I viſit on the diſtant Plain,
Soon trip to *Egypt* and return again.
If you, ye Fair, believe what Poets tell,
I was with *Orpheus* when he went to Hell.
From thence I've wander'd like the rambling *Jew*;
There's ſcarce a Nation but I've wander'd through.
In my Embrace is hid the ſacred Truth;
Yet pleaſe the Charmer with the lovely Youth.

V. Ænigma 140. *By Mr.* Iſaac Tarrat, *of* Epſom.

A Worthy Friend, whom I call *Juba*,
Who merited at conquering *Cuba*;
Does write me Word he'll bring me o'er
A Creature ſtrange upon that Shore.
"At Morn it has four Legs, four Feet,
"It flies not, runs not, will not eat;
"At Noon, 'tis ſtrange, but really true,
"It ſwiftly runs, has Legs but two;

"At

" At Night it creeps on Legs juſt three."
What Kind of Creature can this be?

V. ÆNIGMA 141. *By Mr.* Tarrat.
Ingenia Principium Fata Temporum.

LET Others ſing in Fiction's Strain
Minerva's ſpringing from *Jove*'s Brain;
Of Walls being rais'd by *Amphion*'s Lyre,
And *Cretan* Bulls that breath'd out Fire!
I ſing a Truth, a Prince moſt great
As ever rul'd the *Britiſh* State,
Religion's Son, in Science ſkill'd,
In Council wiſe, brave in the Field;
My Parent he, Invention bright
Inert before, me brought to Light;
I ſail with ev'ry *Britiſh* Fleet,
Each Ship's without me incomplete;
A buſy Spy in *Camp* and Town,
A Friend to *Granby*, and the *Crown*;
To gallant *Geary* on the Main,
And *Trotter John* on *Sarum*'s Plain.
Should my Religion be requir'd,
Some of all Sects have me admir'd;
By *Berkley* prim, and all his Kin,
That hold their ſaving Light within;
I'm call'd in Aid by pious *Secker*,
And wicked *P*— the *Devil*'s Vicar.
Diſſenters all, a num'rous Tribe,
That from each other differ wide;
" As if Religion was intended
" For Nothing elſe but to be mended."
One Part of which, I am converted,
A *Type* of Strength it is aſſerted.
My Vaſſals too, ſay *Bate* and *Lee*,
Are Symbols of the *Trinity*.
And ſome maintain, that central Heat
Is fix'd my Ruin to complete.
So at the laſt *tremendous* Day,
The trembling Poles ſhall then give Way;
And Thunders, Earthquakes, Seas of Fire,
To make one dreadful Scene will then conſpire!

VII. ÆNIGMA 142. *By Mr.* William Swift, *of* Stowe.

UNTAUGHT, unſkill'd, we paint each nobler Sound,
We Kingdoms form, and we Republics found;
Senſeleſs and dead, we Senſe and Life impart,
Enrich the Head, and dignify the Heart.
Abject ourſelves, we raiſe the *Heroe*'s Name,
And e'en perpetuate the Voice of Fame.
Though a ſmall Troop, we're yet a num'rous Throng,
The mighty *Perſian*'s Hoſt not half ſo ſtrong.

By

By Nature dumb, we ev'ry Language ſpeak,
Eternal talk, yet never Silence break.
The Charms of *Proſe*, and Extaſies of *Verſe*,
Virtues and *Vice*, we equally rehearſe.
The Sons of Life from an immortal Spring,
As ſoon as born, the Fates to Ruin bring,
Unleſs our Aid we kindly interpoſe,
And the young Mind for long Duration cloſe.

VIII. ÆNIGMA 143. *by Mr.* Tarrat, *of* Epſom.

A *Monarch* I, *coeval* with the Sun,
When he and *Luna* firſt their Race begun;
Being to Arts and Sciences I give,
By me they riſe, advance, mature, and live;
Deep *Secrets* I reveal, and what to Sight
Of Man is hid, I ſurely bring to Light.
Thrice happy they, beyond the Pow'r of Thought,
Who view my *Gifts*, and prize them as they ought.
When fair *Ideas* ev'ry Fancy charm,
Inſpire their Lives, and ev'ry Action warm:
When *Poets* and when *Painters* are no more,
And all the Feuds of Government are o'er,
'Tis mine to fix their Merit and their Claim,
I judge their Works to Darkneſs or to Fame:
" I caſt *Oblivion* o'er proud *Heroes* dead;
" By me their Acts are from Remembrance hid;
" Nor be ſurpriz'd — Hereafter, when you ſee
" *Ev'n Death itſelf pays Homage unto me.*"

IX. ÆNIGMA 144. *By Mr.* Tarrat.

WE ſearch for *Fables* and Romances
To tickle up the Ladies Fancies;
But why delight'ſt thou, Muſe, to roam,
When Objects quaint are found at Home;
An *Inſtance* here I will produce,
Of which pray make the proper Uſe.
I'm hated, deſpis'd, and as black as the *Devil*,
Yet laviſh of Favours, and always am civil;
Am civil to thoſe, like Lovers deſpis'd,
Purſuing of them by whom I'm chaſtis'd.
With my *Lord* and my *Lady* I am to be found,
If well you inſpect, and your *Optics* are ſound;
With my *Lady*'s Companion, though noted for Pride,
Some hundreds of Times I have ſlept by her Side;
'Mongſt the Servants at Dinner; but this between Friends,
I'm as buſy as *Punch*, at all Fingers Ends.
All this you can pardon, nay too overlook,
But oh! 'tis the De'il *if I'm caught with the Cook.*

X. ÆNIGMA 145. *By Mr.* Thomas Holland, *of* Norbury.

PALLADIUM *Wits*, who ev'ry Year engage
Your lofty Genius to adorn each Page,

Come

Come view a *Slave*, though uncontroul'd my Pow'r,
I know no Bounds, but range the Country o'er.
Like free-born *Potentates* I'm unconfin'd,
As are the raging, rapid Streams, or Wind;
Let Fortune ſmile or frown, behold I riſe,
And mount myſelf aloft up to the Skies;
I oft attend, on the unrival'd Fair,
And *Ethiopian*'s Colour moſtly wear.
In ev'ry ſtately *Palace* ſure to dwell,
Down to the Peaſant's Cot, or Hermit's Cell,
In various Shapes and Form I ſtill appear,
When near the Earth or mounted in the Air.
In a *dark* Cavern *Jonah* made his Tomb,
Till Fate diſgorg'd him from the Fiſh's Womb;
In a *dark* diſmal *Dungeon* too I go,
But neither ſhare Deſtruction, Grief, or Woe.
Though I a Priſ'ner ſometimes do appear,
I quit my *Priſon* with a vaſt Career.
Like a *Geometer*, I form with Eaſe
Curves circular and Spirals when I pleaſe,
Yet know not common arithmetic Rules,
Nor am familiar with the Modes of Schools.
Now tell my Name, fair *Ladies*, be ſo kind,
And me an humble Servant you ſhall find.

XI. ÆNIGMA 146. *By Mr.* Thomas Holland.

VULCAN, 'tis true, in forming me has Part,
My Shape and Figure's owing to his Art;
And *Quadruped*, for they muſt deal in Leather,
Before they can complete my Parts together.
I'm belted round, fair *Ladies*, you muſt know,
And *Loops* and *Hoops* around my Body go.
My Mouth is wide, my Body taper grows,
And when I ſpeak, ſpeak through my Tail and Noſe.
And Urchin-like, my Mouth lies near my Tail,
And like him too am arm'd with Coat of Mail;
Then with ſome Pot-Companion take my Way,
Who trudges with me a long Summer's Day,
My Maſter he is mercileſs and poor,
Like a bold Beggar goes from Door to Door.
Accompanied by homely *Joan* his Wife,
Though not perhaps without ſome Rage and Strife,
Too oft the Caſe: — Then lead a ſingle Life.
But hold, enough — I ſhall be plain anon,
I am a Servant to our Neighbour *John*.

XII. ÆNIGMA 147. *By Mr.* Tarrat.

NOT one kind *Bard* as yet, I wiſt,
Has plac'd me in *Palladium* Liſt;
A Fellow ſmart and dapper too,
Of piercing Parts, well known to you;

With

With Spleen or Vapours not diſtemper'd,
On the Reverſe, am ſweetly temper'd;
And candid Truth of me has ſaid,
I am a neat and poliſh'd Blade.
Great *Ferdinand*'s immortal Name,
Stands foremoſt in the Liſt of Fame,
Which in plain Words is Nothing more
Than that he's ſhed much human Gore.
Then I with him may *Laurels* claim,
Since our Employment's much the ſame;
And ten to one this *warlike* Son,
I make to bleed ere he has done.
I *Serpent* like do wear a Tongue,
That ne'er declaim'd on Cauſe of Wrong;
Yet will the World aſperſe my Name,
By undermining of my Fame;
They call me Robber, Parricide,
Traytor and Tyrant, Regicide,
Revengeful, cruel, *bloody*, Blade,
As *Shylock* ere by *Shakeſpear* made.
But had I Time for Canvaſs nice,
I'd nullify this in a Trice;
Prove Juſtice in my Cauſe depending,
To ev'ry *Quid Nunc*'s Underſtanding.
Remark what *David* ſays of Man,
His Age, comparative, a Span;
Here I fall ſhort; but Truth's the Word,
I'm keener than a two-edg'd Sword.

XIII. *An* Enigmatical Tale. *By Sir* B. C. *Knt.*

AS *Roger* was ranging near to a Wood's Side,
Cloſe hid in a Thicket he at laſt me eſpy'd;
And he to ſecure me dropt down on one Knee,
Then he haul'd me away from under a Tree;
And Home to his Cottage did eagerly go,
And to his Wife *Margery* did me then ſhew.
She ſmiling replied — O *Roger* well done!
Pray make it a Preſent to *Damon* your Son,
He call'd then for *Damon*, ſaid this I give you,
But ſee that you take it to *Vulcan* to ſhoe;
His Orders obey'd — I to *Vulcan* was led,
Who ſhod me and clapt a ſtrong Cap on my Head,
Thus arm'd like a Warrior, I aiding appear,
And *Damon* I guarded from Danger and Fear;
Who kept me not long; but in Token of Love
He gave me to *Dolly*, who as fickle does prove:
She receiv'd me with Rapture, gave *Damon* a Kiſs —
And ſaid this I do — as a Token for this.
How falſe are ſome *Fair Ones* — for in a ſhort while
She gave me to *Strephon*, which made him to ſmile.

He embrac'd me with Kindneſs, and made this Reply;
For you, my dear *Dol*, I ſhall languiſh and die,
If you will not conſent with me ſoon to wed.
— The Maid ſhe ſaid Nothing but nodded her Head:
But *Damon* ſoon heard, how ſhe'd prov'd ſo unkivil,
In Fury and Rage wiſh'd us all at the Devil.
So I care not a Fig who ſhall find out this Riddle,
I am ſhap'd like a *Crane*, or the Neck of a *Fiddle*.

*** *Whoever ſends the beſt Anſwer to the following Enigma, before* March 1, 1764, *has a Chance by Lot for 4 and 2 Palladiums, of* 2*s. each.*

PRIZE ÆNIGMA. *By Mr.* Thomas Sadler.

DEAR Ladies, perhaps you ſcarce ever did ſee
Such a whimſical Kind of a Creature as me;
A greater Deceiver to *England* ne'er came,
As, Ladies, you'll own, when you find out my Name.
Like *Turn-Coat* I vary, and change with the Times,
I'm ſometimes a *Poet*, and Dealer in Rhimes;
Like *Scholar* of *Oxford*, my Learning's profound,
In *Rhet'rick* diſplay'd to my Neighbours around;
And ſometimes ſo full of my Jokes I appear,
Folks burſt out with *Laughter* when me they come near.
In *Sophiſtry* too I oftentimes deal,
Can out-do the Lawyer, with all his mock Skill.
The Figure I cut, and the Dreſſes I wear,
Will compel you to ſmile when my Caſe you ſhall hear.
With Don *Pedro* from *Spain*, or *Monſieur* from *France*,
Or gay *Britiſh Ladies*, I lead up a Dance.
As backwards and forwards I wave in the Air,
I cauſe your Surpriſe in the Form I appear!
If more of my Wonders you'd have me fulfil,
I, like a *Phyſician*, can both cure and kill.
Sometimes I'm like Skeleton, meagre and thin,
And ſometimes, like *Beſty*, ſwell'd up to my Chin;
A Changeling more ſtrange you ſcarce ever did know,
I'm ſometimes a *Blackamoor*, now a briſk *Beau*.
My Aſpect I vary, and ſometimes my Shape,
A Monſter I mimick, and ſometimes an Ape;
Can crawl on all four, and now dreadful appear
To frighten the *Ladies*— ſo ſubject to Fear.
So, Fair Ones, I leave you my Name to explain,
And bid you adieu till I ſee you again.

The

The QUERIST.

NEW QUERIES.

I. QUERE 152. *By Mr.* William Swift, *of* Stow, Lincolnshire.

WHAT was the Value of the *Pearl* which *Cleopatra* diffolved in Vinegar and drank off at a Draught, (eſtimated *Centies Seſtertium*) in our preſent *Engliſh* Coin?

II. QUERE 153. *By Mr.* P. Antrobus.

FROM whence proceeds the Fall of *Honey*, by ſome called *Mildews*, in the Summer Seaſon, in *England*?

III. QUERE 154. *By the ſame Correſpondent.*

WHY does it freeze *harder* in the *Winter*, when the Atmoſphere is clearer than when it is thick and hazy?

IV. QUERE 155. *By Mr.* John Lyon, *of* Margate.

WHAT were the Contents of *Solomon's* molten Sea, 2 *Chron. Chap.* iv. and *Verſe* 2, in Ale Wine Gallons, *Britiſh* Meaſure?

V. QUERE 156. *By the ſame Correſpondent.*

OF all the *Paſſions* to which the human Mind is ſubject, which is the moſt oppoſite to, and prevailing over, Reaſon?

VI. QUERE 157. *By Mr.* William Wells, *of* Spaldington, *near* Howden.

WHY is *Heth* in the Old Teſtament *(Gen. xxiii. 37. &c.)* called *Emmor* in the New Teſtament?

VI. QUERE 157. *By Mr.* John Clarke, *of* Lincoln.

WHY a Plaiſter being applied to a Horſe's Forehead, (which is frequently done) ſhall produce white Hairs in the Place? The Solution of which, perhaps, may help to account for the different coloured Saddle Spots, occaſioned by the Preſſure of the Saddles on different Horſes?

See the Prize-Quere *farther on.*

NEW PARADOXES, for 1764.

I. *Geographical* PARADOX. *By Mr.* Thomas Walker.

THERE is a Place under the Meridian of *London*, where, upon a certain Day in the Year, the Sun was obſerved to be *exactly* due *Eaſt* at 12 at Noon.

II. PARADOX. *By the* Author.

FOR Want of *Water* we drank *Water*;
If we'd had more *Water* we ſhould have drank *Wine*.

III. Paradox. *Inſcribed to Mr.* Antrobus.
By Joan a Nokes.

YOUR *Paradox* has puzzled more,
Than any *Paradox* before:
As paſt all Skill, no *Necromancer*,
Can yet your *Problem* truly anſwer.
But I myſelf will now endeavour
To make one — as perplex'd as ever.
Let us propoſe — and never mind 'em —
But ſeek for Anſwers till we find 'em.
In eighteen Circles' Centers place
Juſt *eighteen* Trees with reg'lar Grace;
And through thoſe Points I'd have to paſs
Thrice ſeven right Lines — nor more, nor leſs;
Through nine Points four, and twelve Points three:
Ye *Witches*, tell how this muſt be?

NEW QUESTIONS.

I. Question 268. *By Mr.* Iſaac Tarrat, *of* Epſom.

NOT being quite ſure of the Time of my Birth,
And finding myſelf now inclining to Earth;
And reſiding at Diſtance from where I was born,
I wrote to the *Vicar*, (the good Mr. *Horn*,)
Requeſting the *Regiſter* he would inſpect,
And ſend me my *Age* — which he did not neglect;
But writing ſo *odd*,* though his Letter was plain,
I want ſome Aſſiſtance my Age to explain.
To ſome Artiſts I thought of referring my Caſe;
To ſend to the *Di'ry* I thought a Diſgrace:
On *Palladium* Record I ſhall more be content,
There to outlive a *Marble* or *Braſs* Monument!

* *The Sum of the* Date *of the Year*, Day *of the Month, and* Hour *paſt Noon, when Mr.* Iſaac Tarrat *was born, is equal to* 1733.
The Sum of their Squares *is equal to* 2910913.
Their Product *is equal to* 214956.
The Number of the Month, *from* January *inclusive, is equal to once and half the Hour he was born paſt Noon.*

II. Question 269. *By Mr.* William Pen, *at* Chalfont, St. Peter's, Bucks.

IF Money is lent, at 3 *per Cent*,†
To thoſe that pleaſe to borrow;
In what Time ſhall I be worth a Pound,
If I lend a *Crown* tomorrow.

† *At Compound Intereſt.*

III. Question 270. *By Mr.* Marſhall, *of* Blenchland.

WHAT is the *leaſt* Number, which being multiplied by 3783, and divided by 4320, ſhall leave a Remainder of 3732?

IV.

IV. Question 271. *By Mr.* Thomas Walker.

A *Baſon* of Lead, in the Form of a Hemiſphere, whoſe *external* Diameter is 12 *Inches*, is placed in a Tub of Rain Water, with its convex Surface downwards: It is propoſed to determine the *Thickneſs* of the Lead, ſo that the *Baſon* ſhall juſt ſupport itſelf from ſinking; that is, that the Diameter of the Hemiſphere ſhall remain juſt level with the Surface of the Water?

V. Question 272. *By Mr.* William Wells, *of* Spaldington, *near* Howden, Yorkſhire.

A Grazier has a Plot of Ground in the Form of a *Scalene* Triangle, whoſe Sides are 7, 10, and 14 Chains reſpectively, out of which he would incloſe the greateſt *equilateral* Triangle poſſible: Required from thence the Sides and Area of the ſaid Triangle?

VI. Question 273. *By Mr.* P. Antrobus.

A Gentleman hath two Gardens, each of which lying in the Form of a *geometrical* Square; and are ſaid to contain an Acre of Ground apiece. The Length of the Side of the *firſt* Garden is 90½ *Yards*, but he not knowing the *Perch* thereof, requires what *Perch* the ſame was meaſured by? The ſecond Garden he remembers was ſet out by the *Statute* Perch; who alſo requires the Length of one Side of that Garden?

VII. Question 274. *By Mr.* Joſ. Scott, *of* Cawthorne, Yorkſhire.

REQUIRED the Dimenſions of the *leaſt* Cone that will circumſcribe a *Globe*, whoſe *Axis* in Inches is equal to its Solidity in Feet.

VIII. Question 275. *By Mr.* Alexander Rowe.

TO find the Dimenſions and Solidity of the greateſt *inverted* Cone that can be cut out of another Cone, whoſe Altitude is 30, and Diameter at the Baſe = 24?

IX. Question 276. *By Mr.* P. Antrobus.

A *Leaſe Tenement* is held for the *longeſt* of three Lives in *eſſe*, the particular Perſons Ages being 28, 36, and 44 Years; Now this Eſtate being clearly rented at 60 *l. per Annum*, what is the real intrinſic Value thereof, after the Rate of 4 *l. per Cent.* Intereſt, the Longevity of Life being taken for 86 Years; and what *Difference* will be made in this Purchaſe, if the Extremity of old Age was eſtimated at 70 Years?

X. Question 277. *By Mr.* John Lyon, *of* Margate, Kent.

If a Ship ſail from the *Land's End*, in a direct Courſe, till her *Meridian* Difference of Latitude, and *Diſtance* run, in one Sum = 5413 *Miles*, and her Difference of *Longitude* be 4615 *Miles*: Required from thence her *Diſtance* run, and alſo *Difference* of Latitude?

XI.

XI. QUESTION 278. *By Mr.* Rowland Wetherland, *at* Great Salkeld, *near* Penrith, Cumberland.

IF you reckon the Number of *Lunations* completed since that which commenced the 28th of *December*, 1700, Old Style, to the Beginning of any *Lunation* in Question, *multiply* that Number by the *conſtant* Number 7367, add the *conſtant* Number 33890 to the *Product*, and divide the *Sum* by the *conſtant* Number 43200: If the *Remainder*, after Diviſion, or the *Difference* between ſuch Remainder and the *Diviſor* be leſs than 4060, there may be an *Eclipſe of the Sun*, which will be the *greater*, as the Remainder, or its Difference from the *Diviſor*, is the *ſmaller*.

Secondly, If the *Full Moon* be the Thing in Queſtion, reckon it in like Manner; the *Lunations* from that which commenced the 28th of *December*, 1700, to the *New Moon* immediately preceding the given *Full One*, multiply their Number by the *conſtant* Number 37326, and divide the Sum by the *conſtant* Number 48400. If the Remainder, after Diviſion, or the Difference between it and the *Diviſor*, be leſs than 2800, there muſt be an *Eclipſe of the Moon*; which will likewiſe be the *greater* the ſmaller the Remainder, or its Difference from the *Diviſor* is found to be.

The Queſtion then will be, how long will this Rule *hold without Error from its* Epoch *of* December, 1700; *and then to ſhew from what* Principles *it is derived, whereby to make* another Rule *for a new* Epoch *of* Eclipſes *of the Sun and Moon.*

XII. QUESTION 279. *By the late Mr.* Richard Roofe, *of* Cheſterfield, *or* Cheſterfieldienſis.

	Caſes.	*Equations.*	
GIVEN	1.	$ax^2+b^2=z^2$	Here a and b being given whole Numbers, if one Square can be found in the 1ſt *Caſe*, infinite other Squares may alſo be found in that, but not in the 2d *Caſe*. Required the *Demonſtration*.
	2.	$ax^2-b^2=z^2$	
	3.	$ax^3+b^3=z^3$	
	4.	$ax^3-b^3=z^3$	

Required alſo to *demonſtrate*, whether or not the 3d and 4th *Caſes* follow the Laws of their correſponding 1ſt and 2d *Caſes*.

Admitting a, in the 3d *Caſe*, to be a *whole* Number under 216, and $b=10$ (for *Illuſtration*) required from thence to find 7 whole *Cubes* (x^3,) which being multiplied by 7 whole Values of a, and all under 216, adding thereto a given *Cube* (b^3) will make 7 other whole *Cubes* (z^3). And if the 7 whole Values of a, that produced the 7 other whole *Cubes* aforeſaid be put in the 1ſt *Caſe* for a, required, from thence, to find (if poſſible) 7 whole *Squares* (x^2), which being multiplied by the 7 whole Values of a, found as before, adding thereto a given *Square* (b^2) will make a *Square* (z^2).

Likewiſe *admitting* in the 4th Caſe a to be any whole Number under 153, required thence to find 7 whole *Cubes* (x^3), which

which being multiplied by 7 whole *Values* of a, and all united, 53, ſubtracting therefrom a given *Cube* (b^3) will leave 7 whole *Cubes* (z^3).

Moreover, if the 7 Values of a, found as above, be put in the 2d *Caſe* for a, required from thence, to find, if poſſible, 7 whole *Squares* (z^2), which being multiplied by the 7 Values of a, aforeſaid, ſubtracting therefrom a given *Square* (b^2) will leave a *Square* (w^2)?

XIII. QUESTION 280. *By Mr.* John Clark, *of* Lincoln.

IN two Southern Latitudes under the ſame Meridian, the one being as far from the *Equinoctial* as the other is from the *Pole*, on *July* 16, 1762, the *Sun* was obſerved to riſe in the greater Latitude, 24 Minutes ſooner than it roſe in the *leſſer*. The Latitudes and Longitudes of both *Places* are required, with the *Inveſtigation*.

XIV. QUESTION 281. *By the ſame Correſpondent.*

REQUIRED to determine the *Area* of the *greateſt* Triangle that can *poſſibly* be inſcribed between the Peripheries of two *concentric* Circles, whoſe *Radii* are reſpectively equal to 30 and 60?

XV. QUESTION 282. *By Mr.* Williams, *of* Hackney.

IN what Year before *Chriſt* did the *Sun* enter *Libra* 4 Minutes before *Noon*, and alſo 2 Minutes before *Midnight*, the moſt nearly, according to the *Tables in the Royal Aſtronomer*, in the Meridian of *Greenwich* Obſervatory? And in what Year of the vulgar *Chriſtian* Æra, (i. e. according to the preſent Reckoning) in the Reign of what King of *England*, and in what Year of that Reign, did the Sun enter *Libra*, the moſt nearly, one Minute before *Midnight*, in the ſaid Meridian of *Greenwich*?

☞ If *Mr. Kennedy's* beſieging Subſcribers will compare the Reſult of his *Rules* of Computation with the *true ones*, in the Solution of the *above Queſtion*, they will quickly find that *true Aſtronomy* has ſuffered a *total* Eclipſe from a falſe *Belief* in the Subject. — *Real Knowledge and Belief being totally different.*

XVI. QUESTION 283. *By Mr.* Edward Johnſon, *at* Hull.

A Ship ſails from a Port under the Equinoctial and ſteers W. by S. (ſuppoſing no *Impediment*) until the Port ſhe ſailed from bears due North: Required the Diſtance ſailed and Latitude arrived in.

XVII. QUESTION 284. *By the ſame Correſpondent.*

GIVEN π^{365} = 1.03, to find π true to 12 or 14 decimal Places, by a general and eaſy Method; which may be uſeful in calculating Tables of *compound Intereſt*.

XVIII. *New and Uſeful* QUESTION 284. *By the Same.*

REQUIRED a ſhort and practical Method for finding the Content of a *conic Fruſtum*, in Ale and Wine Gallons, by the common or *Gunter's Sliding Rule*, without finding a mean *Area*, as is commonly practiſed by *Exciſe-Officers*.

XIX.

XIX. Question* 286. *By Mr.* William Chapman, *of* Foxton, Leicestershire.

A Purchase is made of an *Estate* of 100 *l. per Annum*, Copyhold upon *four* Lives, of Ages 15, 17, 25, and 50 Years, on Condition that he and his Heirs take up the Lease continually with Lives of what Ages they think proper, the most to their own Advantage, whenever any one of the Lives becomes vacant, by paying a proposed *Fine* of 200 *l.* Required from thence, what *present Money* the Purchaser ought to pay upon entering on such an Estate, allowing the Purchaser 4 *per Cent.*

* *Inserted in the* Royal Magazine *some Time ago, but never answered.*

XX. Question 287. *By the Same.*

A *Gentleman* proposes to make a *Hopper*, of a Half Inch Board thick, for his *Malt Mill*, in the Form of a *square Pyramid* inverted, so as to hold just 4 Bushels of Malt: He would know the Expence of this *Hopper*, at 2 *d.* a *square* Foot for the *least* Quantity of *Board* possible, it will require.

XXI. Question 288. *By Mr.* Marshall, *of* Blenchland.

AT *London*, the Stars *Aldebaran* and *Rigel* were on the *same Azimuth* Circle at 10 at Night, 1763, required from thence on what Day of the *Month* this *Phænomenon* happened.

XXII. Question 289. *By Mr.* Isaac Tarrat.

AT *London*, the Stars *Betelgeuse* and *Pollux* were observed to have equal Altitudes, in 1763, at 9 at Night; required the *Month-day* when it happened.

XXIII. Question 290. *By Mr.* Thomas Sadler.

AT a certain City is a *Tower*, and two *Spire* Steeples, standing in a triangular Form, their Distance from each other are in *geometrical* Progression, and the Sum of all their Distances equal to 960 Yards. — Moreover, the Height of the Tower and two Spires are expressed by $\frac{1}{2}$, $\frac{2}{3}$, and $\frac{3}{4}$, of the *nearest* Distance of any two, *viz.* of the Tower and one of the Spires. — Required from thence their Distances from each other, and likewise their Altitudes?

XXIV. Question 291. *By the same Correspondent.*

REQUIRED the Age of a *remarkable* old Man from what follows. If you subtract the Square Root of the Year of his Birth from the *Date* of the Year of his Death, there will remain 1596.4903; if from the *Product* of the Year of his Birth and that of his Death, you subtract the Square Root of his Death, the Remainder will be 2424664.5649.

XXV. Question 292. *By the Same.*

A *Castle* on a Mountain stands;
suppose
In Height a *Mile* — to guard against our Foes;
And from a Tow'r, of Yards one hundred high,
The Castle you at *greatest Distance* spy;
What will the Space from *Tow'r and Castle* be,
Allowing *Norwood's* Miles* in one Degree. *69½.

XXVI.

XXVI. QUESTION 293. *By the Same.*

REQUIRED the greateſt *Parallelogram* that can be *inſcribed* in an *Ellipſis*, whoſe Periphery is 80, and Tranſverſe Diameter 34, and likewiſe its *leaſt* circumſcribing Triangle. — With the *Inveſtigation.*

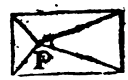
XXVII. QUESTION 294. *By the Same.*

INGENIOUS Artiſts, tell the World my Age,
To be recorded on *Palladium Page*;
From theſe Equations which below you view,
I'll ſtrive next Year to do as much for you.

Given $\begin{cases} x-y-z=1708. \\ x^2-y^2-z^2=2992626. \\ z^3=x+1645. \end{cases}$ $x =$ the *Year of my Birth.* $y =$ *Month.* $z =$ *Day of the Month.*

XXVIII. QUESTION 295. *By Mr.* Edward Johnſon, *of* Hull.

THERE is an *infinite* Number of *Rectangles*, whoſe Sides are expreſſed by whole *rational* Numbers; and have a certain *Point within them* (at *unequal* Diſtances from the Angles) from whence, *Lines* being drawn to the 4 Angles of the *Rectangle*, thoſe *Lines* ſhall be expreſſed by whole *rational* Numbers. *Required* the *leaſt* of thoſe Rectangles, by a *general Method*, and the Situation of the above-mentioned *Point*, P. *See the Fig.*



*** *Whoever truly anſwers the following Queſtion by the 1ſt of March next, has a Chance by Lot to win* 6 New Palladiums *enlarged, of* 2s. *each, equal in Value to the Number of the* old ones.

PRIZE-QUESTION. *By the* AUTHOR *of the* Royal Aſtronomer and Navigator.

THE *Gnomon* of a *horizontal* Dial, in Latitude 15° 30′ North, is perpendicular to the *Plane of the Horizon*; required to determine at what Hour in the Fore and Afternoon, on the 23d of *June*, 1764, the Shadow of the *Gnomon* will *ſtand ſtill*, and how many Degrees it will go forward, the ſame Way with the Sun's Motion; and how many Degrees back, the contrary Way to the Sun's Motion, for that Day? Which Anſwer may account for the Sun's *ſtanding ſtill and going back*, as mentioned in the *Scripture*; though not taken Notice of, or accounted for, in *Kennedy*'s late *miraculous* chronological Computation.

ANSWERS to the ENIGMAS in the PALLADIUM, 1763.

I. IVY.
II. A FLAIL.
III. Figure of 9, or ſmall g.
IV. A TURTLE.
V. LIGHTNING.
VI. A BED.
Priſe. A GUNTER's CHAIN.

To the Palladium-Author.

SIR,

Happening to call on 'Squire *Guzzle* the Day his Tenants came to pay their Rents; the Converſation between him and one of them, before Dinner, was in Subſtance as follows.

Jacas de Epſom.

Squire. Well, *Farmer*, how does your *Wife* do,
And GEORGE, and *Dick*, and little *Sue*; 3.
Farmer IVY and his young Wife, 1.
She's *Dutch*-built, and will laſt his Life. —
How's NAN PHILLIPS and old *Hunter*, 1 *Reb.*
Young *Walton* and Mother *Gunter*? *Prize.*

Farmer. Wife's pretty well, and ſo is *Dick* —
But poor *George* is very ſick —
Little *Sue*'s as briſk as LIGHTNING, 5.
Ivy's Wife and he's been fighting. —
There's no Guard, Meaſter, 'gainſt a FLAIL, 2.
Young *Kittens* will play with their Tail. —
*Nan Phillips**, ſhe's as chaſte as TURTLE, 4.
Freſh as Roſe, and ſweet as Myrtle.
Poor old *Hunter* he is BED-rid, 6.
But young WALTON's come in his Stead. 2 *Reb.*
And yonder comes Gammer *Gunter*. —

Squire. Odds ſo! — here comes Dinner —
We'll not ſpoil't, as I'm a Sinner.
Come, Gentlemen, be ſeated pray —
You're welcome all — as I may ſay.
The Grace was ſhort, the Plates well pil'd,
The Glaſs went round — and th' *Squire* ſmil'd.

* *With Reſpect to* Nan's *Chaſtity, it is thought the Farmer belied his own Knowledge.*

An ANSWER *to all the* ÆNIGMAS *in the* Palladium, 1763.

On the Power of Love.

By Mr. J. Knowles, *of* Epſom.

CANST thou ſtop deſcending Rain,
Or bind the LIGHTNING in a CHAIN; 5. *Prize.*
Forbid the IVY's fond Embrace, 1.
Make TURTLES to the Hawk give Chace; 4.
Then may'ſt thou ſtop, below, above,
The Progreſs of all-mighty Love.
At 9 Days old make Children ſpeak, 3.
In *Hebrew*, *Latin*, *French*, or *Greek*;
Make gloomy Night o'er Day prevail,
And uſeleſs prove the *Scythe* and FLAIL; 2.
Then may'ſt thou trace below, above,
The Lab'rinth of all-mighty Love.
— The raging Sea forſake her BED, 6.
Or Man the foaming Surface tread;

Make

Make Fiſhes ſkim the wide Expanſe,
Or bid paſt Ages to advance,
Then may'ſt thou ſtop all-mighty Love,
Deſcending from the Realms above.

All the ÆNIGMAS *anſwered by Mr.* John Clark, *of* Lincoln.

1. AS late I walk'd along the flow'ry Lawn,
Where gentle Zephyrs fan the cooling Breeze,
And Lambkins ſporting with the tender Fawn,
And Wood* Lark ſinging ſweet among the Trees,
* 2. *Flail.*

2. Near to a Fountain, on a moſſy BED, 6.
Where odoriferous Flow'rs ſcent the Air;
On a reclining Bed, a-ſleep was laid,
Hebe, the Goddeſs of the youthful Fair.

3. Her flowing Locks, like curling IVY, ſpread, 1.
Down her ſmooth Shoulders gracefully they hung;
Myriads of Graces danc'd around her Head,
And tuneful *MUSES to their Lyres then ſung.
* *Fig.* 9 *or* g.

4. *Venus* deſcended from the *Cyprian* Grove,
Down to this charming *Lawn* ſhe took her Flight; *Pr.* 4.
In her gilt Car was CHAIN'D two TURTLE Doves,
Her Eyes, like LIGHTNING, ſhot forth radiant Light. 5.

5. *Hebe* aroſe to meet the beauteous Queen,
And give a Welcome to her royal Gueſt,
The lovely *Inſects* ſkip along the Green,
And Bowls of *Nectar* crown the rural Feaſt.

ANSWERS *to all the* ÆNIGMAS *in the* Palladium, 1763.

On the Morning.

By Ozwin Sutton, *of* Epſom.

MY dear *Lucinda* now the Door unbar'd,
And, ſoftly ſighing, led me through the Yard;
Then whiſper'd thus, "O *Cheopbil* be true,
"Think what this Night hath paſs'd, *adieu, adieu.*"
"Doubt not, ſweet Love," I preſs'd her Hand and ſaid,
So parting with Regret, ſtole Home to BED; 6.
For bright *Aurora* leading in the MORN, 3. *alluding to* 9 *o'Clock.*
With roſy Bluſhes did the Eaſt adorn;
Sad *Philomel* gave o'er her plaintive Strains,
With whetting SCYTHE reſounds the dewy Plains. 2.
Hence FLASHING Stars, that did the Heav'ns adorn, 5.
And the bright Sun excites the crimſon Morn;
In yonder miſty Lawn, the lowing Ox
Call'd waking Echo from her IVY'd Rocks; 1.
Whoſe mimic Voice did through the Vallies rove,
Where the ſmooth TURTLE courts her faithful Love, 4.
Nature's gay Scenes, Meads, Streams, inverted Skies,
Detain my Thoughts, and CHAIN my raviſhed Eyes. *Prior.*

The PRIZE-ÆNIGMA, *anſwered by* Ozwin Sutton, *of* Epſom.

MINERVA once to *Perſeus* lent her Shield,
Secure of Conqueſt ſent him to the Field;
The *Grecian* acted what ſhe had ordain'd,
So was his Fame complete, and *Andromede* un-CHAIN'D.

Anſwer to the ſame by Alexis. *Addreſſed to Miſs* E— C—.

WITH ſuch a *Fair* who would not taſte
The Sweets of *Hymen*'s chaſte Repaſt?
Open, avow the *veſtal* Flame,
And gladly hug the *ſilken* CHAIN!

Anſwer to the ſame, by Mr. J. Knowles *of* Epſom.
To a young Lady, on her ſaying there is Nothing *worth living for.*

THE Slave, who groans in *Turkiſh* CHAINS,
May hold *this Maxim* true;
A diff'rent *Maxim* he maintains
Who hopes to live with you.

Another Anſwer by the Same. On Winter.

AT Length the ſoft Delight of *Summer*'s fled,
And noxious *Vapours* now their Influence ſhed;
Now *Boreas* in rude chilling Froſts detains
The captive Streams in ſolid Chryſtal CHAINS.

Mr. *T. Sadler* anſwered the *Prize-Ænigma* alſo in Verſe.

The PRIZE-ÆNIGMA *anſwered by* Roſalinda.
To the Palladium-Author.

WITH *Watch* in Hand to ſee the Minutes paſs,
My Contemplation your *Ænigma* was;
A CHAIN* and *Hymen* did preſent to View;
If right, I muſt refer myſelf to you.

N. B. *We ſhould be glad if this Lady would oblige us with her real Name and Place of Abode.*

An Anſwer to the PRIZE-ÆNIGMA, *by Mr.* Thomas Walker, *of* Stanton-Bury, *near* Newport Pagnel, Bucks.

On PEACE.

BE theſe thy *Arts*, to bid Contention ceaſe,
CHAIN* up ſtern War, and give the Nations Peace;
O'er Subject-Lands extend thy gentle Sway,
And teach, with Iron-Rod, the haughty to obey.

* *A Gunter's Scale.* *Quotation from Virgil's Æneis.*

The ſame was anſwered by Mr. *John Clarke*, of *Lincoln*. Mr. *Thomas Sadler*, of *Newhall*, near *Wrenbury*, *Cheſhire*; alſo by Mr. *Thomas Holland*, of *Norbury*.

Mr. *George Johnſon*, of *Newark*, alſo anſwered the *Prize*; as did Mrs. *Ann Collet*, of Fourteen, and of excellent Talents, who mentions not the Place of her Abode.

☞ Jacas de Epſom *claims by Lot* 4 Prize Palladiums, *and Mr.* Ozwin Sutton, *of* 21, *each*.

ANSWER

ANSWER *to the* Ænigmatical Epitaph *at the City of* Bologna, *in* Italy, *by Mr.* Ozwin Sutton, *of* Epsom.

D. M.

Sacred to the *Manes* of
Ælia Lælia Crispis,

Who was neither Male, Female, nor Hermaphrodite; neither a Girl, Youth, nor an old Woman; neither chaste, a Whore, nor a modest Woman, but was all these. She died neither by Famine, Sword, nor Poison; but by all three. She lies neither in the Air, nor in the Waters, nor in the Earth, but every where.

Lucius Agathe Priscius,

Who was neither her Husband, nor Gallant, nor Relation, neither weeping, rejoicing, nor mourning, erected this; which is neither a Fabric, a Pyramid, nor a Tomb, but all these. But to whom he knoweth, and yet knoweth not.

Under this Ænigma were the following Words.

' Ænigma
' Quod peperit Gloria
' Antiquitas,
' Ne periret Inglorium
' Ex antiquato Marmore
' Hic in novo reparavit
' Achilles Valta Senator.

That this *Ænigma*, the Invention of ingenious Antiquity, might not be lost by the Decay of the antient Marble, on which it was first engraven, it stands here, cut in fresh Characters by Order of *Achilles Valta*, a Senator.

On the four Sides of the same Stone are twelve different Explanations *of this* Epitaph, *with the Names of their sagacious* Authors.

Mario Michael Angelo will have it to be RAIN.

Fortunius Licetus, the BEGINNING AND ENDING OF FRIENDSHIP.

John Casper Gavartius interprets it to be LOVE.

Zachary Pontinus says it was designed for the Remains of THREE different Persons.

Johannes-Nicholas Barnaud, that it is an EUNUCH, or the PHILOSOPHER'S STONE.

Agathias Scholasticus (if that was his Name) affirms it to be NIOBE.

Richardus Vitus will have it to be the RATIONAL SOUL, or the *Idea Platonis*; and *Ovidius Montalbanus*, HEMP.

Count *Malvasia*, in a particular Treatise, entitled *Ælia Lælia Crispis non nata resurgens*, interprets it of a Daughter promised to a Person in Marriage, who died pregnant with a Male Child *before* the Celebration of her Nuptials. Besides these learned Persons, *M. de Cigogne Ingrande* has discovered POPE JOAN in it. The celebrated *Boxhorn* says it is a SHADOW; and a ludicrous Hand has taken the Liberty to scratch on the Stone, under the above-mentioned Illustrations, *un Pette*, or a F—T.

Mr. *Knowles*, of *Epsom*, answered the same.

On

On Lucinda, *dreſſed for a Ball.* *By* Probus.

SOME ſay 'tis *hard* to look at *Smiles*,
At *dimpled* Cheeks and *radiant* Eyes;
That *Beauty* Reaſon ſoon beguiles,
In ev'ry Look there's Danger lies!
But when, in Charms of Dreſs, the *Fair*
Leads, at a *Ball*, the ſprightly Dance;
She, in each Grace, divine appear,
And *wins* at ev'ry *modeſt* Glance —
— A *Feaſt*, when for the Appetite prepar'd,
And ſet before us, — not to taſte *is hard*.

ODE *on* FRIENDSHIP. *By* Amanda.

I.

TELL me, *Probus*, when I miſs you,
Why I paſs the Day in Pain?
What compels me thus to wiſh you
From your Pleaſures back again?

II.

'Tis not *Love*, where looſe Deſire
Riots with a peaceful Name;
But a quiet conſtant Fire,
Like the holy *veſtal* Flame.

III.

O 'tis *Friendſhip* thus connects us,
Friendſhip, Principle divine!
Where no *Senſe*, no *Sex* directs us,
Souls alone to Souls incline.

IV.

Hence, the Sailor, Tempeſt-driven,
Far from *Home*, from *Love*, and *Reſt*;
Often finds this Child of Heaven,
In the wild *Barbarian*'s Breaſt!

ANSWERS *to the* QUERIES *in the* PALLADIUM 1763.

I. QUERE 145, *anſwered by Mr.* Henry Harpſwell.

IT is the *Meanneſs* and *Infamy* with which Lying is loaded by the World, and the *Miſchief* it is capable of, ſecretly practiſed and undiſcovered, that *irritates* a Man when he is reproached with the Name of *Lyar*, more than when he is reproached with any other odious Vice. If a Perſon is called *Rebel*, *Traytor*, *Murtherer*, *Thief*, *Knave*, *Cheat*, *&c.* thoſe Names, ſuppoſing Anger and Malice, are often a Self-Confutation of the Aſperſion. *Plutarch* uſed to call Lying the Vice of a Slave; a Vice, which *only* the Scum of the human Race are, for the moſt Part, guilty of; and therefore the *Reproach* of a *Lyar* makes too odious and unbearable an Impreſſion for human *Species* (of the better Sort) to endure with Patience. In conſidering

conſidering the dangerous Conſequences of this Vice, no prudent Man would chuſe to be concerned with a *reputed Lyar*; nor keep him Company.

II. QUERY 146, *anſwered by Mr.* John Lyon, *of* Margate.

IF a Man makes his Addreſſes to a Woman, who he is ſenſible to be of a different Religion from his own, and contracts not with her for the Change of her Religion among other Stipulations before his Marriage, ſhe is not guilty of any *Diſobedience* to her Huſband in not changing her Religion afterwards, if he ſhould deſire it. For, her Duty to *God* is a *prior* Obligation to all others; and ſhe is to ſatisfy her Conſcience as to the Practice of religious *Points and Ceremonies*. The *beſt Means* therefore for Huſbands to bring ſuch Wives to their own Religion and Way of thinking, is by all the tender and affectionate Perſuaſions that *Love* can inſpire and *Eloquence* expreſs.

Mr. *Alexander Rowe* obſerves, that Womens Pretenſions to *Love* and *Obedience*, before they are married, proceed from what Men frequently put in Practice *(the Elegance of Flattery)* to obtain their deſired Objects; which when they have accompliſhed, have no longer need of that Motive to be actuated by, but return to their former and ſettled Reſolutions. — That Women to bring Men over to marry them, profeſs great *Love* and *Obedience*, enforcing their Arguments with mighty and reaſonable Perſuaſion, but always regard *Time* and *Place* when they would make their greateſt Impreſſions.

Mr. *Henry Harpſwell* ſays, that where the Tenets of different Religions are very oppoſite, one Side may have *Reaſon*, the other *Prejudice*, to vindicate their Diſagreement. — But where there is an eaſy *Tranſition* from one Religion to the other, or a near Agreement, *(ſuppoſing one to be a Methodiſt and the other an Anabaptiſt)* Nothing but Obſtinacy can hinder the Wife from cloſing with, or yielding reaſonable Obedience to, her Huſband. Which muſt neceſſarily encreaſe his Eſteem, and be a future Foundation of her Happineſs.

This Correſpondent anſwers the *bringing over* the Wife, when a wide Difference ſubſiſts between them, by Prayers to God to quicken her Spirit in *divine Myſtery*, and to infuſe into her the *vital Part* of Chriſtianity. So as ſhe may little regard the different Modes of Worſhip in the Church or Meeting-houſe, if ſhe takes Hold of the true Religion. — Who hopes that all different Modes of Worſhip will rot with the *Grave-Dreſſes* of the Deceaſed.

Obſervation by Tom Styles.

If the Huſband is a *Catholic* and the Wife a *Proteſtant*, the beſt Way to bring her over is to deliver her to the Diſcipline of his Prieſt. But if, on the contrary, the Huſband be a Proteſtant and the Wife a Catholic, his beſt Way to bring her over is, to let her lie ſeparate till ſhe brings herſelf over to his Bed, and a Convert in Obedience to his Way of thinking.

Or if the foregoing Methods prove ineffectual, *Tom* is of Opinion that the Huſband and Wife ſhould both agree to live in *Bridewell* or *Bedlam*, under ſtrict Diſcipline, till they can ſettle their Opinions.

III.

III. Query 147, *answered by Mr.* Thomas Marshall, *of* Blenchland.

THE different *Appearances* of Stars, some more *fiery* than others, proceed from their different Distances from us, and the Difference of their innate Heat and Light, emanating different Appearances to our Senses, through the optic Organs; and *Medium* of the Atmosphere.

IV. Query 148, *answered by Mr.* P. Antrobus.

THE Liquors in the Eye-Ball never freeze, because they are of a *spirituous* Nature; in which all our eminent Anatomists agree. — See *Keil, and other Anatomists, on the Construction of the Eye.*

V. Query 149, *answered by Mr.* Alexander Rowe, *of* Reginnis, Cornwall.

ONE Use of *subterraneous* Fires is to expel the subterraneous saline and sulphureous Particles, which rising in the Air with others attracted by the *Sun-beams*, are productive of those needful Operations in Nature, *Lightning*, *Thunder*, and other celestial *Phænomena*; by the *Action* and *Reaction* of which, the Air and Sea are purified and corrected. These *subterraneous* Fires are as necessary to promote and sustain the Operations of this Part of the Universe, as the natural Heat in Mens Bodies is to the Preservation and Support of their Beings. The *subterraneous* Fires are, also, probably of Use to promote the *Circulation* of subterraneous *Fluids* through the remote Passages of the Earth by *Rarefaction* and *Expulsion*, so as to assist the Course of the Tides. — The *final* Effects of which Fires seem to be a *general Conflagration* and *Dissolution* of this our whole earthly Globe; in which Opinion the wisest and most learned Men are agreed.

VI. Query 150, *answered by the* Author.

TO *recover a drowned human Body to Life, when possible*; strip off the Cloaths (if any are on), roll the Body about to force out some of the Water, and excite Motion. Next, suspend the Body by the Anckles to discharge more Water; during which, diligent *Friction*, or strong *Rubbing* with Hands and Brushes, must be used, to excite Heat and Motion; and Brandy must be applied to the Limbs and Spirits to the Nose. When all the Water is discharged that can be speedily got away, the Body should be wrapt in *Blankets*, placed before a *Fire*, or put into a *warmed Bed*, which ever is first at Hand. Then *diligent Rubbing* must be continued, with *Spirits* applied as before. A purging *Clyster* to be given and repeated. But above all these, wise Experience directs some Person to blow with the Spouts of Bellows into the Lungs through a hollow Iron Tube, directed to the Wind-Pipe, (first opening the Mouth by a Purchase, or *Speculum Oris*) by which Means of inflating the Lungs, lately compressed with the Weight of Water about the Heart, and thereby stopping its Motion, *Pulsation*, *Life*, and *Motion*, have soon followed, when the Body and Limbs have been *stiff*, *cold*, and *dead* to *Appearance*, for half an Hour or longer. (See the *Newtonian Philosophy by Tommy Telescope*, for a Confirmation of this Experiment. *Sold by Mr.* Newberry, *in* St. Paul's Church-yard, *Price* 1*s.*)

PRIZE-

PRIZE-QUERE, *answered by* Monitor.

Remove but the Cauſe, and the Effect will ceaſe.

SINCE the Cauſe of a *Kentiſh* Ague cannot be removed, thoſe afflicted with that imprecated *Malady* muſt remove themſelves from the *Cauſe*, by getting out of the County as faſt as they can; or from that Part of it where the Perſecution reigns.

N. B. The *Ague* by the *Hollanders* is termed the *Curſe*; and the *Catſir* by the *Germans*.

*** *The above Anſwer claims the* Prize, *in Preference to all other Anſwers given, ſeveral of which are good Apothecaries* Recipes, *(which are needleſs to inſert, ſince enough of that* Faculty *are at Hand every where to be conſulted;) which Medicines will abate or remit the Evil for the preſent, but it will return with full Force by its Cauſe, the bleſſed Part of that County. Therefore the above Preſcription is the only ſure* Remedy, *againſt all that can* happen there.

ANSWERS to the REBUSES in the PALLADIUM, 1763.

I. ANN PHILLIPS. II. WALTON. III. EPSOM.

Mr. *William Wells* anſwered the 2d and 3d *Rebus*; as did Mr. *John Lyon*, *P. Antrobus*, and Others.

ANSWERS *to the* REBUSES *in the* PALLADIUM, 1763.

By Mr. Ozwin Sutton, *of* Epſom.

LET famous WALTON be the Fiſher's Joy, 2.
Where glitt'ring Shoals his ſweeping Nets employ;
And fair ANN PHILLIPS *Clark* detains, 1.
And I admire the ſmooth EPSONIAN Strains; 3.
Where *Pan* with Flocks, with Fruit *Pomona* crown'd,
And bluſhing *Flora* paints th'enamell'd Ground.

A general Anſwer *to the* REBUSES, *by Mr.* J. Knowles, *of* Epſom.

LET WALTON boaſt its Bridge and purling Streams, 2.
To me more tempting are EPSONIAN Plains; 3.
Where Hills and Vales ſo ſtrike the boundleſs View,
They ev'ry Moment yield ſome Pleaſure new,
Love's *Goddeſs* ſeems determin'd here to reign,
If fair ANN PHILLIPS will compoſe her Train. 1.

ANSWERS *to the* PARADOXES *for* 1763.

I. PARADOX *anſwered by the* Propoſer.

AS there is always above 24 Hours, or about 24 Hours and $\frac{1}{2}$, between the *Moon*'s next *Riſing*, *Southing*, and *Setting*, there muſt of *Neceſſity* be 29 Days in each Month, (as appears by every good *Ephemeris*, eſpecially by the *Connoiſſance des Temps*) whereon the Moon can neither riſe, ſouth, nor ſet, *reſpectively*. For when ſhe riſes a little before 12 at Night, as on the 10th Day of any Month, ſhe will not riſe again till the 12th in the Morning; conſequently ſhe does not riſe on the 11th Day. — And when ſhe *ſouths* a little

before 12 at Night, ſhe will not ſouth again till the Day after the next in the Morning. — And when ſhe ſets a little before 12 at Night, ſhe will not ſet again till the Day after the next in the Morning. — So that there are 3 Days in each Month, whereon the Moon can neither *riſe*, *ſouth*, nor *ſet*, to the Inhabitants of any Part of *Great Britain*; reckoning a Day from 12 to 12 at Night. Or, if you conſider the Moon's *Riſing*, *Southing*, or *Setting*, a little before 12 at Noon, in 3 Days of each Month, the ſame Conſequence will follow, *viz.* that ſhe can neither *riſe*, *ſouth*, or *ſet*, on the 3 following Days reſpectively. And this without any *Ambiguity*.

II or Turnstile Paradox, *anſwered by* Sydrophel.

PLANT 9 Trees on a *moveable* ſquare *Plat* (*ſee the Figure*) with one in the Center thereof, which *Plat* of Trees muſt move on the Center-Tree, by an *Axis* underneath, like a *Windmill*, to a *fixed* Tree placed at a Diſtance, marked by a Dot. Then, in the different Poſitions the Plat may be placed with the fixed Tree, there will be 8 different *Center* Rows of 4 Trees in each; and 8 different *Side* or *End* Rows, of 4 Trees in each, (*turning End for End*,) making 16 Rows, or 1 above 15, and may be *turned* to any Number of *Rows* under 16, *viz.* 15, and *no more*, the Number of Rows required.—This original or ſtupendous *Paradox* is ſaid to be inverted by Mr. *Wilme*, of *Lancaſhire*.

☞ By the above Method of planting Trees, there may be *artificial moving Rivers*, *&c.* to ſolve *Prodigies* in Nature. — But we ſhould be more obliged to our *ingenious* Correſpondents to ſend us Things conſiſtent with Proprjety.

*** *Thus we have, for once, ſeen ſolved an impoſſible Queſtion and Paradox*, viz. *the 1ſt Queſtion and 2d Paradox.*

To be read forward and backward.
A ſupernatural Grammatical Conundrum.
Signa te ſigna temere me tangis et angis,
Roma tibi ſubito motibus ibit amor.

ANSWERS *to the* QUESTIONS *in the* PALLADIUM, 1763.

I. Queſtion 232, *anſwered by the Author of the* Royal Aſtronomer and Navigator.

A general Method to determine all fractional Quantities in poſſible whole Numbers; by which all Queſtions relating to Remainders are ſolved.

LET x be the leaſt Number, which being divided by 50, 28, and 9, then 16, 10, and 1, ſhall reſpectively remain; for 16, 9, and 1, cannot (as given in the *Queſtion*) poſſibly remain; becauſe, in the 2*d Condition* $\frac{x-9}{28}$ a whole Number, wherein $x = 50a + 16$ is ſubſtituted for the 1ſt Condition, (reſulting from $\frac{x-1}{50}$ a whole Number

Number $= a) \frac{50a+7}{28} = a + \frac{22a+7}{28}$ a whole Number, where the Coefficient 50 or 22 of a, and Divisor 28, are both *even Numbers*, at the same Time the other Member of the Numerator is an odd Number. — Which *even* Coefficient being subtracted from the even Coefficient of $\frac{28a}{28}$ ever so often, or the even *Multiples* of the Remainder subtracted therefrom, will still leave an *even Coefficient* of a, with the Fraction in its *lowest Terms*; which therefore cannot be a whole Number. — Therefore, instead of $\frac{x-16}{50}$, $\frac{x-9}{28}$, $\frac{x-1}{9}$, being whole Numbers, $\frac{x-16}{50}$, $\frac{x-10}{28}$, $\frac{x-1}{9}$, may be whole Numbers,

Putting, $\frac{x-16}{50} = a$, $x = 50a + 16$, which put in the 2d possible *Condition*, then $\frac{50a+6}{28} = a + \frac{22a+6}{28}$ will be a whole Number, which deducted from $\frac{28a}{28}$ a whole Number, and $\frac{6a-6}{28}$ rem. a whole Number, 5 Times which is $\frac{30a-30}{28}$ a whole Number, from whence deduct $\frac{28a-28}{28}$ a whole Number, and $\frac{2a-2}{28}$ $= \frac{a-1}{14} = b$, a whole Number, whence $a = 14b + 1$; and being put for its Value in $x = 50a + 16$ will give $x = 700b + 66$; which now substitute in the 3d Condition, then $\frac{700b+65}{9} = 77b + \frac{7b+2}{9} + 7$, or $\frac{7b+2}{9}$ a whole Number, which taken from $\frac{9b}{9}$ a whole Number, $\frac{2b-2}{9}$ a whole Number remains, 5 Times which $= \frac{10b-10}{9}$, from which take $\frac{9b-9}{9}$, then $\frac{b-1}{9} = c$, a whole Number, remains, where $b = 9c + 1$; substituting which in

in the 2d Condition, $x = 7006 + 66$, and $x = 6300c + 776$, anſwering all the Conditions of the Queſtion let c be what it will; ſuppoſe $c = 0$, then $x = 776$, the leaſt Number poſſible anſwering the Conditions. But $\frac{x-16}{50}$, $\frac{x-10}{28}$, $\frac{x-1}{9}$, three whole Numbers, being reduced to one Fraction, in loweſt Terms $= \frac{1051x - 4966}{6300}$ = their Sum. To find the Value of x? Six Times this Fraction $= \frac{6306x - 29796}{6300} = \frac{6306x - 4596}{6300} - 4$, a whole Number, from which deduct $\frac{6300x}{6300}$, a whole Number, there remains $\frac{6x - 4596}{6300}$, which divided in the Numerator and Denominator by 6, gives $\frac{x-766}{6300} = c$; whence $x = 6300c + 766$ as before; and $x = 766$ when $c = 0$. After which Manner all Queſtions of this Nature may be eaſily and expeditiouſly ſolved, under poſſible Conditions; which muſt be when, in *loweſt Terms*, the Coefficient of the *unknown Quantity* in the Numerator is *odd*, and the Denominator *even* or *odd*.

*** *Mr.* P. Antrobus, *propoſing a Queſtion in impoſſible Remainders, has been productive of a general Solution, in all poſſible Caſes!* — *With the Diſtinction of what is poſſible and not. See alſo* P. 161. 2, 3, 4, 5, 6, Royal Aſtronomer and Navigator, *for a general Solution of this uſeful Propoſition; by which all the poſſible Payments of any Sum may be made in different Gold Pieces.*

☞ Mr. *William Tuting*, of *Newmarket*, ſays, that this Queſtion might be eaſily anſwered by the Method of *converging Fractions*, (firſt communicated by Mr. *Cotes*) had it not been propoſed in *impoſſible Numbers*.

II. QUESTION 233, *anſwered by Mr.* Iſaac Tarrat, *of* Epſom.

LET x and y = the 18 and 21 Shilling Pieces. Then $18x + 21y = 2400$ Shillings; whence $x = \frac{2400 - 21y}{18} = 133 - y + \frac{6 - 3y}{18}$, where $\frac{6 - 3y}{18} = \frac{2 - y}{6}$, or $\frac{y-2}{6}$, a whole Number $= a$, whence $y = 6a + 2$, a whole Number, let a be what it will; which when $= 0$, then $y = 2$, and the Number of 18 *Shillings* and *Guineas* correſpondent as follows.

N. B.

N. B. $21y + 18x = 2400$, $= 7y + 6x = 800$, whence $y = \frac{800 - 6x}{7} = 114 + \frac{2 - 6x}{7}$, where $\frac{2 - 6x}{7}$ or $\frac{6x - 2}{7}$, a whole Numb. but $\frac{7x - 7}{7}$, a whole Number, taking the former from the latter, $\frac{x - 5}{7} = b$, a whole Number, whence $x = 7b + 5$, a *general Theorem*; where 5 is the leaſt Number of 18 Shilling Pieces, (b being $= 0$).

18s. $x = 5, 12, 19, 26, 33, 40, 47, 54, 61, 68, 75, 82, 89, 96, 103, 110, 117, 124, 131.$ } 7 Dif. Incr.

21s. $y = 110, 104, 98, 92, 86, 80, 74, 68, 62, 56, 50, 44, 38, 32, 26, 20, 14, 8, 2.$ } 6 Dif. Decr.

being 19 different Ways, in all, that 120 *l.* can be paid in 18 Shilling and Guinea Pieces, required.

☞ By the foregoing Method of Deduction, it is quickly determined that 100 *l.* cannot be paid at all in *Guineas* and *Moidores*; nor yet in *Moidores* and *Six and Thirties*.

Mr. *Marſhall*, of *Blenchland*, anſwered the ſame in all the Circumſtances; who obſerves that 2 Guineas and 131 Eighteen Shilling Pieces, 110 Guineas and 5 Eighteen Shilling Pieces, are the *Extremes* of the Anſwers; the intermediate Numbers being found by adding 6 to the Guineas, and taking 7 from the 18 Shilling Pieces.

Mr. *Tuting*, of *Newmarket*, curiouſly anſwered the ſame by the Method of converging Fractions.

Mr. *Edward Johnſon*, of *Hull*, anſwered the ſame in the foregoing Manner, of 19 different Ways, putting x and y for the 18 *s.* and Guinea Pieces, and finding $x = 133 + \frac{2 - 7y}{6}$, and $y = 114 + \frac{2 - 6x}{7}$, where $\frac{7y - 2}{6}$ and $\frac{6x - 2}{7}$ being whole Numbers, he gets the *leaſt* Value of $y = 2$, and the *leaſt* Value of $x = 5$; but when $x = 5$, then $y = 110$, and when $y = 2$, then $x = 131$; whence all the Values according to Mr. *Tarrat*'s Solution.

Mr. *P. Antrobus*, Maſter of the Grammar-School at *Great Budworth*, ſolved it in the ſame Manner.

Mr. John Clarke's *Anſwer.*

PUT $y =$ the Number of Guineas, and $x =$ Number of 18 Shilling Pieces. Then, *per Queſt.* $18x + 21y = 2400$ Shillings; or, by Diviſion, $6x + 7y = 800$. $\therefore x = \frac{800 - 7y}{6} = 133 - y +$

$\frac{2 - y}{6}$

$\frac{2-y}{6}$, whence $\frac{y-2}{6}$, a whole Number, (ſuppoſe) $= n$. Then $y = 6n + 2$, and $x = \frac{786-43n}{6} = 131 - 7n$ ∴ x muſt be an *Affirmative* whole Number. It is *evident* that n may be any whole Number betwixt 0 and 18 ($= \frac{131}{7}$) incluſive. Conſequently the Queſtion admits of 19 different Solutions. Thus, when $n = 0$, then $x = 131$, and $y = 2$; when $n = 18$, then $x = 5$, and $y = 110$, the two extreme Values thereof, as aforeſaid.

Mr. *Thomas Wilkin*, Writing Maſter at *Hexham*, anſwered it in the ſame Manner; as did Mr. *Thomas Walker*, at *Stanton-Bury*, near *Newport Pagnel*; Mr. *William Wells*, of *Spaldington*, *Yorkſhire*; Mr. *James Taylor*, of *Lowcrompton*, near *Oldham*, *Lancaſhire*; Mr. *Alexander Rowe*, of *Reginnis*, *Cornwall*; Mr. *Robert Stainton*, of *Wincheſter-ſtreet*, *London*; Mr. *John Lyon*, of *Margate*, in *Kent*; Mr. *William Chapman*, of *Foxton*, *Leiceſterſhire*; Mr. *John Swan*; and Mr. *Thomas Sadler*.

III. QUESTION 234, *anſwered by Mr.* Edward Johnſon, *of* Hull.

PUT $a = 16$ = Length, $b = 9$ = Breadth, $c = 6$ = Depth; then $\frac{abc}{2} = 432$ Inches, the ſolid Content of the Wedge. Now let $n = ,5275$ *oz. Troy*; and $D = 11,092$, the ſpecific Gravity of fine Silver, according to Mr. *Emerſon*'s Tables. — Then $432\,D = 2527,64496$ Ounces, the whole Weight of the Wedge; which at 5*s. per* Ounce comes to 631 *l.* 18*s.* 2*d.* $\frac{1}{2}$. W. W. R.

Mr. Thomas Marſhall's Anſwer.

BY Menſuration, $16l. \times 9B \times 6D$ = Solidity in Inches. *Hence*, the *Weight* of { Fine Silver / Standard ditto } is { 2527,21512 *oz. Troy* / 2400.524208 }

the *Value* { Fine Silver 631*l.* 16*s.* 0*d.* / Standard ditto 600 2 7 } required.

Mr. John Clarke's *Anſwer*.

SOLIDITY of the Wedge $= \frac{3}{4} \times 9 \times 16 = 432$ Inches. By P. 130, *Emerſon*'s *Mechanics*, 10,536 Standard; and of Water = 0,5275 oz. *Troy*. ∴ $10,536 \times ,5278 = 5,55774$ oz. Weight of a cubic Inch of Silver. Conſequently, $5,55774 \times 432 = 2400,94363$ oz. Weight of the Wedge; its Value 600*l.* 4*s.* 8*d.* $\frac{1}{2}$.

Mr. *William Staples*, Watch-maker, at *Wincheſter*, anſwered the ſame, from *Ward*'s ſpecific Gravity of Silver, ſimilar to the above Method, making the *Lady*'s Fortune 600*l.* 2*s.* 7*d.* ,452, *&c.*

Mr. *P. Antrobus*, Maſter of *Great Budworth* Grammar-School, makes the Wedge's Solidity = 432 Inches; which being multiplied by 5,556769 oz. the Weight of one Cubic Inch of Silver, gives 2400,524208 oz. the Content, which, at 5*s. per* oz. comes to 600*l.* 2*s.* 7*d.* 1,808.

Mr.

Mr. *James Scott*, of *Cawthorne*, anſwered it in the ſame Manner; as did Mr. *Lyon*, of *Margate*; Mr. *John Smith*, of *Hexham*; Mr. *Thomas Walker*, Mr. *Thomas Stainton*, Mr. *William Wells*, Mr. *Alexander Rowe*, Mr. *Thomas Wilkins*, Mr. *Thomas Marſhall*, Mr. *William Lakeland*, and Mr. *Tuting*, at *Newmarket*.

IV. QUESTION, 235, *anſwered by Mr.* Thomas Marſhall, *of* Hexham, Northumberland.

ACCORDING to Mr. *Emerſon*'s Principles of Navigation, he computes the Diſtance between the *Lizard* and *Barbadoes* to be 3413 Miles, which, at the *Rate* of 600 *per Week*, will take up 5 Weeks, 4 Days, 18.696 Hours to ſail over.

Mr. *William Wells*, anſwers it in the ſame Numbers; but Mr. *Thomas Wilkins* ſays 3413 Miles, and 5 W. 4 D. 19,64 Hours ſailing over.

Mr. *Alexander Rowe*, (who is ſaid by Mr. *Walker* to have borrowed this Queſtion) computes the Diſtance 3462 Miles, and the Time 5 W. 5 D. 9 H. 21 S. 56 Th.

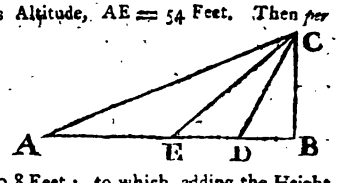
Mr. *Thomas Walker*, of *Stanton-Bury*, near *Newport-Pagnel*, *Bucks*, is pleaſed to obſerve, that the above Queſtion was taken from Mr. *Emerſon*'s *Navigation*; being (he ſays) the very ſame as *Prop.* 16. *P.* 92. of that excellent *Book*; where there is an *elegant* Conſtruction of that Caſe; not to be improved (he ſays) by Mr. *Alexander Rowe*, or any polite Author whatſoever.

Mr. *John Harwood*, at *Newmarket*, by the Globe, makes the Diſtance between the *Lizard* and *Barbadoes* = 57°, which (according to *Norwood*) at 69½ Miles to a Degree, requires 46,2175 Days to ſail over, at the Rate of 600 Miles in 7 Days.

Mr. *John Lyon*, of *Margate*, likewiſe anſwered it; Mr. *P. Antrobus*, Mr. *John Smith*, of *Hexham*, and ſeveral others.

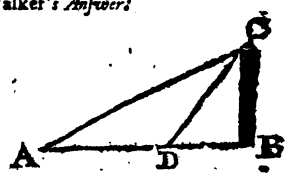
V. QUESTION 236, *anſwered by Mr.* P. Antrobus.

LET BC = the Tower's Altitude, AE = 54 Feet. Then *per* Queſt. the ∠s BAC = 24° 30′, CEB = 49°, CDB = 73° 30′. Conſequently all the Angles are given, and the Side AE = 54. Whence by Trigonometry, the Altitude BC is found to be = 40,8 Feet; to which adding the Height of the Eye 5 Feet, the whole Height will be 45,8 Feet. W. W. R.



Mr.

Mr. Thomas Walker's *Answer:*



LET A and D repreſent the Places of the 1ſt and 2d Obſervations, *(the 3d being ſuperfluous,)* and becauſe *(per* 32. *e.* 1.) the $\angle ACD = \angle A$, $\therefore$ CD $=$ AD $=$ 54 Feet; Whence, *(per plane Trig.)* Rad. : DC :: S. $\angle$ CBD (given 49°) : BC $=$ 40,75, and 40,75 $+$ 5 Feet, the Height of the Eye, $=$ 45,75 Feet, the *Caſtle*'s Height, required.

It was anſwered in the ſame *Manner*, by Mr. *Thomas Morſhall*, of *Blenchland*, Mr. *Thomas Wilkins*, and Mr. *Joſeph Scott*, of *Cawthorne*, *Yorkſhire*.

Mr. *Alexander Rowe* gave the ſame Number for the Caſtle's Height from an *elaborate Proceſs* and *Conſtruction*, without diſtinguiſhing (as Mr. *Walker* did) that the 3d Station was ſuperfluous. Mr. *William Wells*, of *Spaldington*, near *Howdon*, *Yorkſhire*, ſolved the ſame. Mr. *Lyon*, of *Margate*, Mr. *John Swan*, at *Buxton*, *Derbyſhire*, Mr. *John Smith*, of *Hexham*, and ſome Others.

VI. Question 237, *anſwered by Mr.* Edward Johnſon, *Mathematical Maſter, of* Hull.

PUT $a = 120$ *l.* $x =$ Pounds in the Bag left; $y =$ Pounds in the Bag delivered. — Then, *per* Queſt. $x + y = a$, and $x^3y^2 =$ a *Maximum*. From the firſt Equation we have $\dot{x} = -\dot{y}$, and from the ſecond $3y^2x^2\dot{x} + 2x^3y\dot{y} = 0$; wherein by writing $-\dot{y}$ for $\dot{x}$, and then dividing by $x^2y\dot{y}$, becomes $2x - 3y = 0$; $\therefore x = \frac{3y}{2}$, which put for x in the firſt Equation gives $\frac{3y}{2} + y = a$; whence

$$y = \frac{2a}{5} = 48 \text{ l.} \text{ and conſequently } x = \frac{3y}{2} = 72 \text{ l.}$$

W. W. R.

The ſame anſwered by Mr. Iſaac Tarrat, *of* Epſom.

LET $x =$ the Pounds remaining in the Farmer's Poſſeſſion, then $a - x =$ Pounds delivered to the Highwayman. But $\overline{a-x}^2 \times x^3 =$ a *Maximum*. In Fluxions, $3a^2x^2\dot{x} - 8ax^3\dot{x} + 5x^4 = 0$.

Reduced, $x = \frac{3a}{5} = 72$, and $a - x = 48$. W. W. R.

Mr. *John Clark*, of *Lincoln*, anſwered it in the ſame Manner and Numbers; as did Mr. *William Likeland*, of *Cawood*, near *Selby*, *Yorkſhire*; (Mr. *P. Antrobus* by the Method of Trial and Error;) Mr. *Alexander Rowe*, Mr. *William Wells*, Mr. *Thomas Marſhall* of *Blenchland*, Mr. *John Swan*, Mr. *Saunderſon*, of *Harborough*, and Mr. *Thomas Sadler*, near *Wrenbury*, *Cheſhire*.

Mr.

Mr. *Walker* puts $x =$ the Pounds in the greater Bag, and $y =$ Pounds in the leſſer; then, *per* Queſt. x^3y^2 is a *Maximum*. In Fluxions, $3x^2\dot{x}y^2 + 2x^3y\dot{y} = 0$. Reduced $\dot{x} = -\frac{3}{2}y$. But, *per Data*, $x = 120 - y$, $\therefore 120 - y = \frac{3y}{2}$; whence $y = 48$, and $x = 72$.

Mr. *Thomas Walker*, of *Hexham*, ſays let $x =$ Pounds in the Bag of greater Value, $b = 120\,l.$ then $b - x =$ Pounds in the Bag of leſs Value. Whence, *per Queſt.* $x^3 \times \overline{b-x}^2$, a Maximum. In Fluxions and reduced, $x = 96 \pm 24 = \left\{\begin{matrix} 72l. \text{ the greater} \\ 48l. \text{ the leſſer} \end{matrix}\right\}$ Bag.

VII. Question 238, *anſwered by Mr.* Iſaac Tarrat.

PUT $a = 2538$, $b = 1286$, $z = x + y$: Then $x^2 + y^2 = a - z$, and $xy = b - z$; multiply this laſt Equation by 2, and compare it with the firſt, and we ſhall have $z^2 = a + 2b - 3z$, conſequently $z = \sqrt{a+2b+2.5} - 1.5 = 70$, the Father's Age; then $x + y = 70$, and $x = 70 - y$, by the ſecond $x = \frac{121b}{y}$ $\therefore 121b = 70y - y^2$, ſolved $y = 35 \pm \sqrt{1225 - 121b} = 32$: Conſequently, $x = 70 - 32 = 38$.

Hence the Father was born in 1693 } And the youngeſt Son in
The eldeſt Son in 1725 } 1731. W. W. R.

Mr. Thomas Marſhall's *Anſwer.*

GIVEN $\left\{\begin{matrix} x^2+y^2+x+y = 2538 = b; \\ xy + x + y = 1286 = c; \end{matrix}\right\}$ Let $a + e = x$; and $a - e = y$; then, by Subſtitution, we have $2a^2 + 2e^2 + 2a = b$; and $a^2 - e^2 + 2a = c$, from whence is eaſily found $a = \frac{\sqrt{4b+8c+9}}{4} - \frac{1}{4} = 35$; and $e = \sqrt{\frac{b - 2a^2 - 2a}{2}} = 3$.

Hence $\left\{\begin{matrix} a+e = 38 = x \\ a-e = 32 = y \end{matrix}\right\}$ the Son's Ages; and $38 + 32 = 70$, the Father's Age, born in 1693.

Mr. *William Lakeland* anſwered the ſame, as did a Correſponden; ſtiling himſelf *Yorkſhire Jack*; Mr. *P. Antrobus*, Mr. *William Pen*, of *Chalfont St. Peter's, Bucks*, and ſome Others.

The ſame anſwered by Mr. Edward Johnſon of Hull.

GIVEN $\left\{\begin{matrix} 1 \\ 2 \end{matrix}\right.$ $\left.\begin{matrix} x^2+y^2+x+y = 2538 = a \\ xy + x + y = 1286 = b \end{matrix}\right\}$ Req^{d} x and y?

$a + 2 \times 2$ | 3 | $x^2+2xy+y^2+3\times\overline{x+y} = a+2b$.

3 comp. $\square$ | 4 | $\overline{x+y}^2 + 3\times\overline{x+y} + \frac{9}{4} = a + 2b + \frac{9}{4}$

4 *in* 2	5	$x+y+\frac{3}{2} = \sqrt{a+2b+\frac{9}{4}} = 71,5.$
$5-\frac{3}{2}$	6	$x+y = 70 = s$, the Father's Age.
$2-6$	7	$xy = b-s = 1216 = p.$
7×4	8	$4xy = 4p.$
$6\oplus 2$	9	$x^2+2xy+y^2 = s^2.$
$9-8$	10	$x^2-2xy+y^2 = s^2-4p.$
10 *in* 2	11	$x-y = \sqrt{s^2-4p} = 6.$
$6+11$	12	$2x = 76 \therefore x = 38$ } Sons Ages.
$6-11$	13	$2y = 64 \therefore y = 32$ } Sons Ages.

Whence the Dates are 1693 } Father born.
1725 } Eldeſt Son.
1731 } Youngeſt Son.

The ſame anſwered by Mr. Thomas Walker, *of* Stanton-Bury.

GIVEN	1	$x^2+y^2+x+y = a$ } Put $x = x+y$, and by Tranſ-
	2	$xy+x+y = b$ } poſition of the 2 Equations,
	3	$x^2+y^2 = a-x$ } Whence
	4	$xy = b-x$ } Whence
4×2	5	$2xy = 2b-2x.$
$3+5$	6	$x^2+2xy+y^2 = a+2b-3x.$
$\sqrt{6}$	7	$x+y = \sqrt{a+2b-3x}$; but $x+y = z$, $\therefore z = \sqrt{a+2b-3x}$.
7 ſquared	8	$z^2 = a+2b-3x$; or $z^2+3x = a+2b.$
8 □ Root extracted	9	$z = \sqrt{a+2b+\frac{3}{2}\Big|^2} - \frac{3}{2} = 70.$ Whence $x = 38$, $y = 32$.

Mr. *Alexander Rowe* ſolved the ſame analytically, and found the ſame Numbers; as did Mr. *John Swan*, mathematical Maſter, at *Buxton* Free-School, in *Derbyſhire*; Mr. *Thomas Marſhall*, Mr. *William Wells*, Mr. *Thomas Wilkins* of *Hexham*, Mr. *Joſeph Scott* of *Cawthorne*, *Derbyſhire*, Mr. *Saunderſon*, Mr. *Thomas Sadler*, and Others.

VIII. Question 239, *anſwered by Mr.* Thomas Marſhall, *of* Blenchland.

BY the Principles of *Fluxions*, (which may do as well as thoſe of *Algebra*) $\frac{ax^4-x^5}{3x+a}$ being a *Maximum*; $4ax^3\dot{x}-5x^4\dot{x}\times\overline{3x+a}$, *Min.* $3\dot{x}\times ax^4-x^5 = 0$. Reduced, and the Root extracted, $x = \frac{a\sqrt{13}:+a}{6}$.

Mr. *Thomas Wilkins* ſolved this Queſtion in the ſame Manner.

Mr.

Mr. *Alexander Rowe*, by the Method of *ipse dixit* says, when $a = 50$, x must be $= 38$; and that the Expreſſion above $\frac{ax^4 - x^5}{3x - a}$ $= 152571$ *fere*.

IX. QUESTION 240, *anſwered by Mr.* Iſaac Tarrat.

LET x and y = their reſpective Shares, then $x + y = a = 2450$ *l.* Put $b = 379750$; then $x - y = \sqrt{b}$, and $x = \frac{a + \sqrt{b}}{2}$, and $y = \frac{a - \sqrt{b}}{2}$. W. W. R.

Mr. William Lakeland *anſwers it thus.*

PUT x = greateſt Share, then $x - a$ = the leſſer; $a = 2450$, hence $x^2 - x^2 + 2xa - a^2 = b = 37950$. Now, *per* Tranſp. $2ax = b + a^2$; and *per* Diviſion $x = \frac{b + a^2}{2a} = 1302,5$ = eldeſt Son's Share, and $1147,5$ = that of the youngeſt. W. W. R.

A *Yorkſhire* Correſpondent puts $\frac{1}{2}$ Sum $(= 1225) = a$, $\frac{1}{2}$ Diff. $= x$: Then, $a + x$ = greater, and $a - x$ = leſſer Shares. *Per* Queſt. $4x^2 = b$ $(= 379750)$ where $x = \frac{b^{\frac{1}{2}}}{2} = 308,115$. Conſ. 1533,115 and 916,885 are the required Shares.

Mr. *P. Antrobus* puts $a = 2450$, $e = 379750$, and x and y = Shares of the two Sons. Then $x + y = 2450$, and $xx - yy = 379750$ *per* Queſt. and $x - y = \frac{a}{e}$, $2x = \frac{aa + e}{2a}$. Whence $x = \frac{aa + e}{2a} = 1302,5$ the greater Share, and $y = \frac{aa - e}{2a} = 1147,5$ *l.* the leſſer.

Mr. *Thomas Walker*, of *Yorkſhire*, puts $a = 2450$ *l.* $b = 379750$; x = the leſſer, and $a - x$ = the greater Share. Then $\overline{a - x}^2 - xx = b$, *per* Queſt. that is $a^2 - 2ax + x^2 - x^2 = b$; or $a^2 - b = 2ax$, whence $x = \frac{a^2 - b}{2a} = 1147,5$, and $a - x = 1302,5$.

Mr. *Alexander Rowe* analytically found the very ſame Numbers; as did Mr. *John Swan*, Mr. *Thomas Marſhall* of *Blencbland*, Mr. *William Wells*, Mr. *Robert Stainton* of *Winchester*, Mr. *James Taylor*, at *Lowcrompton*, near *Oldham*, *Lancaſhire*, Mr. *Thomas Wilkins* of *Hexham*, Mr. *Lyon* of *Margate*, Mr. *Joſeph Scott*, Mr. *William Pen*, and ſeveral other Correſpondents.

N. B. Mr. *John Smith* anſwered it differently thus. If it is meant that their *Shares* ſhould each be reſpectively *ſquared* and the

Difference taken, (putting x for the greater and y for the leſs Share)

$x+y=2450=s$ } 2d ÷ by 1ſt, $x-y=\frac{d}{s}$.

$x^2-y^2=379750=d$ } add 1ſt and laſt Equations and ÷ 2, then

$x=\frac{d}{2s}+\frac{s}{2}=1302\ l.\ 10\ s.$ and $y=1147\ l.\ 10\ s.$

Mr. *James Brown* of *Newmarket* anſwered it in the ſame Manner.

But if the *Difference* of the Shares ſhould be taken, and that Difference ſquared, then, $x+y=s$, $x^2-2xy+y^2=d$; whence $x=\frac{s+\sqrt{d}}{2}=1533,1192$ the greater, and $x=l.\ 916,8808$ &c. the leſſer.

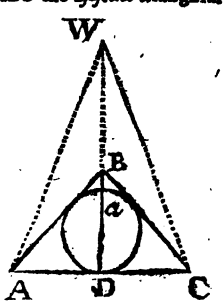
Mr. *Thomas Sadler* only anſwered it in the ſame Manner and Numbers.

Remark by the Author.

Such *Difference* does *ambiguous* Words produce;
From ſuch *Defect* of Language now in Uſe.

X. QUESTION 241, *anſwered by Mr.* Thomas Walker.

LET W repreſent the *Windmill*, and ABC the *Iſoſceles* triangular Field; then (AW being = CW, *per* Queſt. and $\angle BAC=\angle BCA$, *per* Nature of the Triangle ABC) the $\triangle WAB=\angle WCB$, and *per* a known Analogy (*for this particular Caſe*) the $\angle AWB=\angle WAB$, and conſequently AB = BW = 27. Then, in the Iſoſceles $\triangle ABC$, we have one of the equal Sides, as AB given = 27, and the Diameter aD of its *inſcribed* Circle = 16, to find its Baſe AC? Put $AD=DC=x$; $AW=\frac{s}{2}=a$; $AB=27=e$; $aD=16=c$, and let $aB=y$. Then, *per* 47. *e.* 1. $a^2-\overline{s+y}^2=x^2$, (*s* being put = *e*) =

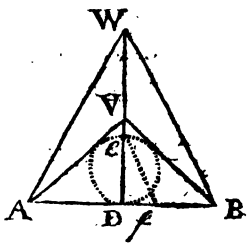


$BW+c$; and by the ſame *Theorem*, $c^2-\overline{c+y}^2=x^2$: Whence $a^2-\overline{s+y}^2=c^2-\overline{c+y}^2$; or $a^2-s^2-sy-y^2=c^2-c^2-2cy-y^2$. Contracted, we get $2sy-2cy=a^2-s^2-c^2+c^2$; $\therefore y=\frac{a^2-s^2-c^2+c^2}{2s-2c}=5,166$: Hence $x=16,76$ Ch. and $2x=33,52$ Ch. &c.

Mr.

Mr. Alexander Rowe's *Solution.*

PUT WV + De = 4 = *a*, De = 16 = *b*, Df = 8 = *c*, AW = (BW) = 51 = *d*, and Ve = *x*. Now (*ſaith Mr. Rowe*) the △s Dfe and DAW being ſimilar, (becauſe *fe* ‖ AW,) it will be, $b : c :: a + x : \frac{ca + cx}{b}$ = AD. And (*per* e. 47. 1.) $\sqrt{dd - a^2 + 2ax + xx}$ = AD = $\frac{ac + cx}{b}$, which ſolved, *x* = 2,6157



Chains. Whence AB = 45,6; AV = (VB) 29,43 Chains; and *Area* of △ AVB = 42 A. 1 R. 31 P. W. W. R.

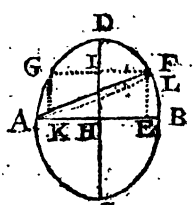
Mr. *Thomas Sadler*'s Anſwer came too late to be inſerted.

XI. QUESTION 242, *anſwered by Mr.* Alexander Rowe, *of* Reginnis, Cornwall.

FIRST, 40 × 30 × 0,7854 = 942,48 □ *Chains*, the Ellipſis's Area. — Now, the Area of the elliptic Sector (formed by the *Conjugate*, as Radius, and the *Fence* Line) may be conſidered as that of a circular one = 157,08 □ Chains ($\frac{1}{6}$ of the whole) ∴ 157,08 ÷ 30 = 5,236 Chains, half the Length of the ſectoral Arch or Chord, the Difference being inconſiderable, ∴ $\sqrt{30^2 - 5.236}$ = 29,539 Chains, the Fence's Length, nearly true, (*if I've hit the Propoſer's Meaning,*) and Value of the whole Field 235*l.* 12*s.* 5*d. proxime.* W. W. R.

The ſame anſwered by Mr. Thomas Sadler.

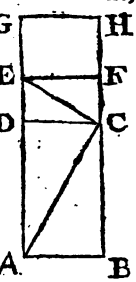
LET ABCD be the elliptical Field, then *per* Conics, as DC : AB :: AB : GF, the *Latus rectum* = 22,5 = KE, and $\sqrt{\square DH - \square AH}$ = HI = 13,22 = EF. Conſequently AF = 29,3909, whence the Length of the Fence AL may be found = 32,23. —— Thus, as the Area AFDG = 286,47 : 314,16 = $\frac{1}{2}$ of the Ellipſes :: AF = 29,3909 : AL = 32,23 nearly, as above.



XII.

XII. Question 243, *answered only by Mr.* Thomas Marshall, *of* Blenchland.

LET AGHB be the given Cylinder, AC the *horizontal* Plane, (or Plane of the *Section* of the Cylinder when cut and placed *horizontally*) and let EC ⊥ AC; then put DC=EF=18=b; c=AG=60, p=,7854. Call AD=BC=x: Now, (because AD : DC :: DC : DE) $\frac{b^2}{x}$ = DE; and $c - x - \frac{b^2}{x} = \frac{cx - xx - b^2}{x}$ = GE. Hence, $\frac{1}{2}pb^2x$ = Solidity of the *cylindric* Frustum ADC; and $\frac{cx - xx - bb}{x} \times pb^2$ = Solidity of Cylinder EGHF. The Weights of the Solids AEC and CEGH, on each Side of the *Perpendicular* EC, must be equal, or the Body will fall. *Therefore*, we have the Solid ACD = Solid EGHF; because CDE = CEF; that is $\frac{cx - xx - bb}{x} \times pb = \frac{1}{2}pb^2x$. Reduced $x^2 - \frac{2c}{3}x = -\frac{2bb}{3}$,



Solved, $x = \frac{c \pm \sqrt{c^2 - 6bb}}{3}$ = 6,435341 or 33,564659 Inches, the Distance to be cut off from the End of the Cylinder to the Extremity of the Base, on the *contrary* Side, required.

Or, since it is easy to prove, that EG = ½ AD, (because the Solid ACD = Solid EGHF,) hence this *easier Solution*. Put x = AD=BC; b=DC=18. Then, $c - x - \frac{x}{2} = \frac{2c - 3x}{2}$ = ED = $\frac{bb}{x}$, by Property of △ ACE, right-angled at C. Hence, the same Equation as before, and the same Value of x.

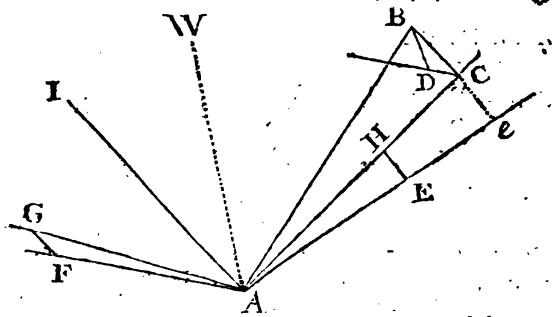
☞ *The above Question, by Mr.* Johnson, *of* Hull, *is a curious one, as it is a Pattern for Others to propose Things concerning the Affections of mathematical Quantity.*

N. B. Being an *ambiguous* Question, it appears, that when 6 Times the Square of the *Cylinder's Breadth* is more than the Square of its *Altitude*, it will not admit of an Answer.

XIII. Question 244, *answered by Mr.* Thomas Walker.

LET A represent the *Station* of the Ship; B the *Part* to which she is to sail, distant from A 64 Leagues; AI the *Current*, and WA the Point of the Wind, then we have the following

Construction.



Conſtruction. Make the ∠ WAE = ∠ WAF (= 68°) the neareſt the Ship can lie to the Wind; and make AE to EH and AF to FG in the *Ratio* of 5 to 2, (*i. e.* as the Motion of the Ship to the Motion of the Current,) and draw FG and EH ∥ AI, then through GH draw the Lines AG and AHC; from B draw BC ∥ AG; and from C draw CD ∥ AF, and from B draw BD ∥ AI.

Then C is the Place of turning to Windward; and the Ship is to ſteer the *Courſe* and *Diſtance* Ae, and by the *Motion* of the Current ſhe will be brought to C.

Then ſhe muſt ſteer the *Courſe* and *Diſtance* CD, and ſhe will then by the Motion of the Current arrive at B, as was required.

Mr. *Alexander Rowe* ſays, (if he has a right Idea of the *Queſtion*) the Force of the *Current*, in the given *Direction*, *Diſtance*, and *Time*, is computed by keeping the Ship cloſer to the Wind than uſual, *viz.* within about 6¼ Points; and conſequently will not enter the following *Computation*. Which premiſed, the *Queſtion* (he ſays) is reduced to a *parallel one*, with the 12th in *Atkinſon's Navigation*, P. 78, to which he refers for the Method of *geometrical Projection* and *trigonometrical Calculation*; giving the Diſtance there on the *Larboard* Tack = 64,8, and on the *Starboard* = 36 Leagues. Whence, the whole Time of the Ship in arriving at her Port on both Tacks = 3d 0h 28m 48s.

☞ *Mr.* Johnſon, *of* Hull, *ſays, that this Queſtion was propoſed to illuſtrate Mr.* Emerſon's *curious Method of conſtructing Problems in current Sailing. See his Navigation.*

XIV. QUESTION 245, *anſwered by Mr.* Edward Johnſon, *of* Hull.

GIVEN $\left\{\begin{matrix} xx+yy=\square \\ x^3+y^3=\square \end{matrix}\right\}$ to find x and y the leaſt whole non-quadrate Numbers.

Let $y=\frac{3x}{4}$, then $xx+yy$ becomes $=\frac{25x^2}{16}$, a Square; and

x^3+y^3 $(=x^3+\frac{27x^3}{64})=\frac{91x^3}{64}$, which is to be a □ likewiſe:

And

And it will evidently be ſuch when $x = 91$; for then $\frac{91x^3}{62}$ becomes $= \frac{x^4}{64}$, which is a Square. Now make $\frac{x^4}{64} = m^2$, and we get $x = \sqrt{ax}$; whence taking $m = 2$, we have $x = 4$. But x was before found $= 91$. Therefore to anſwer both the Conditions, the Value of x muſt be $= 91 \times 4 = 364$; conſequently y $(= \frac{3x}{4}) = 91 \times 3 = 273$; that is $x = 364$, and $y = 273$, the *leaſt Numbers* required, and will truly anſwer the Queſtion.

For $\overline{364}^2 + \overline{273}^2 = \square$, whoſe Root is 455.

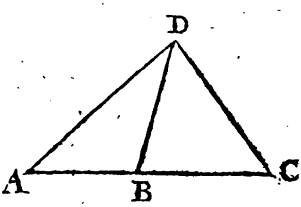
And $\overline{364}^3 + \overline{273}^3 = \square$, whoſe Root is 8281.

*** *Infinite Anſwers to this* Queſtion *may be found by the ſame eaſy Method, notwithſtanding ſome Mathematicians pronounced it impoſſible to give one Anſwer only.*

N. B. Mr. *Edward Johnſon*, of *Hull*, has made an Improvement in this Kind of Solutions, by a very *artificial* Subſtitution, ſo as to effect Things with the greateſt Eaſe, which to others would be a *Herculean* Talk, or next to impoſſible to perform in the common Way. Witneſs his eaſy and direct *Prize Solution*, laſt Year, to the *Prize Queſtion*, when others went round and round the Walls of *Troy* to come at it, inartificially, with the utmoſt Labour. This Tribute we pay, is juſtly due to Mr. *Johnſon*'s *mathematical* Merit.

XV. Queſtion 246, *anſwered by the Propoſer, Mr.* William Chapman, *of* Foxton, Leiceſterſhire.

CORRECTING the Preſs Error, put DC = 80, inſtead of 30. Suppoſe A, B, and C, the three Ports *ſailed to*, and D the Port *ſailed from*. Then, put AD = x = 30; DB = b = 60; DC = c = 80; and AB = x; then BC = $\frac{4x}{3}$, and AC = $x + \frac{4x}{3}$. By a *known*



Theorem, $a^2 \times \frac{4x}{3} + c^2 \times x = \frac{3+4 \times x}{3} \times \frac{4x}{3} \times x + \frac{3+4}{}$

$\frac{3+4\times x}{3}\times b^2$; which reduced, $x=\sqrt{\frac{12a^2+9c^2}{28}-\frac{3b^2}{4}}$

$=53,1843$ *Leagues.*

Then, in the *Triangle* ABD are given all the *Sides*; whence the *Course* of A is 49° 57′ 20″ *Westerly*; of B, 15° 11′ *Westerly*; and of C, 43° 37′ 45″ *Easterly*, — Then, by *Case* 3*d*, *P.* 205 *of Martin's Logarithmologia*, the Latitude of the *Place sailed from* is 1° 53′ 43″ North. Then, by *Case* 4. P. 206, of the same *Book*, the *Long.* of the *Port* A is 3° 26′ 44″ *West*; and the *Longitude* of the *Port* B is 0° 47′ 9″ *West*; and the *Longitude* of the *Port* C is 2° 45′ 37″ *East*. W. W. R.

The same answered by Mr. Thomas Walker, *of* Stanton-Bury, *near* Newport Pagnel, Bucks.

THE Proposer sends a Correction of the Press, *viz.* CD = 80 *instead of* 303 which corrected, put AD = 90 = *a*; DB = 60 = *b*; and DC = *Bonne*; and let AB = *x*; then $3:4::x:\frac{4x}{3}=BC$; and $x+\frac{4x}{3}=AC$; then, *per a known Theorem*, $a^2\times\frac{4x}{3}+c^2\times x=\frac{3+4\times x}{3}\times\frac{4x}{3}\times x+\frac{3+4\times x}{3}\times b^2$, which solved, $x=\sqrt{\frac{12a^2+9c^2}{28}-\frac{3b^2}{4}}=53,1843$ Leagues.

Then, in the *Triangle* ABD are given all the Sides, whence the Course of the

Ship A, B, C } is determined = { 49° 57′ 20″ Westerly, 15 11 00 Westerly, 43 37 45 Easterly } And by *Martin's Logarithmologia, Case* 3*d*, *P.* 205, the Latitude is determined = 1° 53′ 43″ N.

And, by *Case* 4. *P.* 206, same Author, the Longitude of the

Port A, B, C } = { 3° 26′ 44″ *West*, 0 47 9 *West*, 2 45 37 *East* } W. W. R.

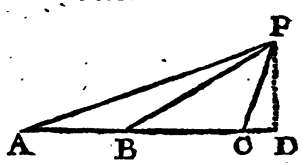
☞ *Quere*, whether the *methodized Solution*, with the Words of the other Solution *inverted* (in some Places,) and the Numbers to a Degree, and also the same Circumstances of Reference to the same Cases and Pages of *Martin's* Book, does not infer as if there were a *licensed Office* for borrowing and leading *mathematical Solutions*, as well as *Questions*, objected to by Mr. *Thomas Walker* against Mr. *Rowe*; which we in Justice observe, to prevent Extravagance in Censure. We leave the intelligent Reader to judge which of these two Correspondents has borrowed the Other's Solution; we having given them both in the same Words and Form they were sent us.

The same QUESTION *answered and improved by Mr.* Edward Johnson, *in* Hull.

PUT $n=3$, $m=4$, AP$=90=a$, BP$=60=6$, CP$=30=x$, AB$=x$, and $p=$AB$\times$BC: Then, by the Nature of Triangles, $p=\frac{ma^2+nc^2}{m+n}-b^2=1414\frac{2}{7}$, and *per* Queſt. $\frac{mx}{n}=$ BC;

whence $\frac{mx}{n}\times x=p$, $\therefore x=\sqrt{\frac{np}{m}}=32,5686=$ AB, and BC $=43,4248$; conſequently AC $=75,9934$.

And now, by Trigonometry, $\angle$APD $=71^\circ\,32'\,26''$, the Courſe of the Ship A; $\angle$BPD $=61^\circ\,39'$, for B's Courſe; and $\angle$CPD $=18^\circ\,13'$, $=$C's Courſe from the South. —— AD $=85,3692$, BD $=52,8006$, and DC $=9,3758$ their reſpective Departures; and their common Diff. Lat. is PD $=28,497$ Leagues, or $1^\circ\,25'$ South, $\therefore$ Lat. ſailed from is $0^\circ\,25'$ North. W. W. R.



XVI. QUESTION 247, *answered by* Chronologicus.

SEE *Palladium* 1763, *Tab. P.* 4. *Rule P.* 6. *and other chronological Rules there.*

3652 before *Chriſt.*
17 Centuries ſince *Chriſt.*

25)53(2 by 8 $=$ 16 Days
50

3) 3(1 . : 1
3 17
3 Sub. 1 becauſe 0 rem. for Years before *Chriſt.*
0

Advance of *N.* D, O.S. + 16 } in the Month-days from 1700 ſince to 3652 before *Chriſt.*
Fr. O. to N.S. — 29 } in 3652 before *Chriſt.*

Lunations —13 Days retreated from O. to N. S.
With cons'y Sig. +13 *Epacts*, or Moon's Age advanced from O. to N. S.

Epact is the Moon's Age at the Beginning of any Year, according to Old or New Style.

The

The *Golden Number* for 3652 before *Chriſt*, is (by *P.* 150 *Royal Aſtronomer*, taken out as for 3651, 1 being deducted for Years before *Chriſt*) 17. [The ſame is done alſo at Sight by *Palladium Tables*, 1762.]

Golden Number 17
Multiply by 11

187 Product.
Epact advanced Days + 13 from O. to N. S.

30)200(6
180

Epact for 3652 before *Chriſt*, N. S. 20 required.
+ 29 Days, Diff. Styles.
— 30

Epact 3652 before *Chriſt*, O. S. 19 required.

	Since *Chr.*	Mean N. ☽ *Jan.* d h m s		d h m s
By P. 385. *R. Aſtron.* 1749	7	3 37 32	+29	12 44 3
		36 16 21 35		
By. P. 386. Mot. for Jul. Yrs.	2400	15 14 8 47		
Motion for Jul. Years	3000	12 2 29 57		
Motion for Jul. Years	5400	27 16 38 44		
Rem. N. ☽ bef. *Ch.* 3652 *Jan.*		8 23 42 51		O. S.
By P. 386. Motion for *Feb.*		28 1 28 6		

	d h m s		d h m s
Mean N. ☽ 3652 bef. *Ch. Mar.*	9 1 10 57	O. S. +	14 18 22 2
Full Moon	23 19 32 59	N. S.	29 Days leſs
		[than O. S. by *Pall.* 1763, *Tab.* P. 4.	

	Mean New Moon. d h m s	Mean Full Moon. d h m s
3652 bef. *Chr. Mar.*	9 1 10 57	23 19 32 59 O. S.
Add 1 *Lunation*	+ 29 12 44 3	+29 12 44 3
	38 13 55 0	53 8 17 2
	— 29 Days.	—29 Days.
March	9 13 55 0	24 8 17 2 N. S.

By *Tab. P.* 148. *Royal Aſtronomer*, the Dominical Letter, O. S. to 3652 before *Chriſt*, (taking out as for 1 leſs for before *Chriſt*, or 3651) is found, at Sight, C, by which, at Sight, (*ſee P.* 149, *Royal Aſtronomer*) the 9th of *March*, for that Year, is on *Tueſday*, when the *New Moon* happened; and the 23d of *March*, on *Tueſday* alſo,

also, when the *Full* Moon happened, O. S. *By Tab. P.* 149. *Royal Astronomer*, the Dominical Letter, New Style, to 3652 before *Christ*, (taking out for 3651,) at Sight, is B; by which, at Sight, in the same Page, *March* the 9th, N. S. when the New Moon happened, was on *Wednesday*, and the 24th of *March*, when the Full Moon happened, N. S. was *Thursday*.

The same may be performed at Sight by Palladium Tables 1762.

☞ Compare the foregoing with Mr. *Kennedy's Computation*, for a full Conviction of his Incapacity and Error in these Matters.

XVII. Question 248, *answered by the Proposer*, Mr. Marshall, *of* Blenchland.

FOR the *Sun's* Cycle, 5 was printed by Mistake instead of 11; For as 15, the *greatest* Indiction, multiplied into 19, the *greatest* Golden Number, will make a *Period* of 285 Years, in which only the *Indiction* and *Golden Number* 10, given, can again happen the same. — Therefore, as a *Lady's Age* is concerned, (within the Limits of 100) there is no Need but to look back in *Table*, P. 15c, *Royal Astronomer*, when the Golden Number was 10, or in *Table*, P. 68, *Palladium* 1763, when the *Indiction* was 1, given; to both which answers the Year since *Christ* 1738; and therefore the *Lady's Age* in 1763 was 25 Years, *required*.

Mr. *Alexander Rowe* made the same Observation, and gave the same Answer.

But to find in what Year of *Christ* the *Golden Number* was 10, *Cycle of the Sun* 5, and *Roman Indiction* 1, as *printed*.

See P. 160, *Royal Astronomer*, for a *Rule*. Where you will find that 4845 multiplied by the Number of the Sun's Cycle, 4200 multiplied by the Number of the Moon's Cycle, or Golden Number, and 6916 by the Number of Indiction, and the *Sum* of those *Products* divided by 7980, (the Number of Years in a *Julian* Period,) the Remainder will be the present Year of the *Julian* Period; from whence the Year of *Christ* (according to our present Reckoning) may be *determined*.

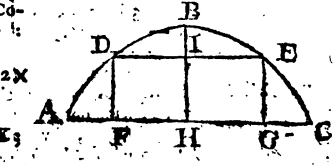
Consequently, $4845 \times 5 + 4200 \times 10 + 6916 \times 1 = 73141$, which $\div 7980$, the Quotient is 9, and there remains 1321, the Year of the *Julian* Period, (when the *Golden Number* was 10, *Sun's Cycle* 5, and *Roman Indiction* 1,) taking which from 4714, the *Julian* Period in the 1st Year *since Christ*, and there remain 3393 Years *before Christ*, correspondent. W. W. R.

XVIII. Question 249, *answered by Mr.* Thomas Walker.

LET $a = 30 = RH$; $b = 40 = AH$; and $x = IH$: By Conics, $a : b^2 :: a - x :$

$$\frac{b^2a - b^2x}{a} = DI^2 \therefore 2X$$

$$\sqrt{\frac{b^2a - b^2x}{a}} = DK;$$



whence,

whence, $2x\sqrt{\frac{b^2a-b^2x}{a}}$ = Area of the *Parallelogram (per Queſtion)* a *Maximum*, which fluxed and reduced gives $x = \frac{2}{3}a = 20$. W. W. R.

Mr. *Alexander Rowe* makes the *Parallelogram*'s Breadth = 20, Length 46,188, and Area 923,76 by much the ſame Proceſs.

Mr. *John Swan* anſwered the ſame.

XIX. QUESTION 250, *anſwered by* Mr. Edward Johnſon, *of* Hull.

PUT $a = 100\ l.$ $n = 208$, the Weeks in 4 Years, and $r = 1,00094c4$, the Amount of 1 *l.* in 1 Week, at 3 *per Cent. per Annum*; then $\frac{a \times \overline{r-1}}{r^n - 1} = 436$, &c. = 8*s.* 8*d.* $\frac{1}{4}$, the Value of each weekly Payment. W. W. R.

XX. QUESTION 251, *anſwered by* Mr. Thomas Marſhall, *of* Blenchland, *who anſwered* 19 *of the Queſtions.*

THE *Hour* and *Minute* Hands are conjoined at 12; from whence ſetting out together, it is evident that the Minute-hand moves over 12 *Spaces*, while the Hour-hand follows, and moves over but 1 *Space*; being *ſimilar* to the mean Motions between the *Moon* and *Sun*, ſetting out together, till they meet again at next *New Moon*. Now, the Minute-hand having moved over 12 Spaces, and arrived at 12, in its uniform *circular* Motion, while the Hour-hand is got but one Space or Hour forward, at *One*, which the Minute-hand is yet to overtake: Say, *as the Difference of Motion, or Diſtance between the ſwifter and ſlower Movers, is to the Time ſpent between them during their Motion, ſo is one complete Revolution or any Part of a Revolution performed between them to the Time ſpent between them, correſpondent.*

Thus, as $12-1=11$, the Difference of Space moved over between the Minute and Hour-hand, is to one Hour, or 60 Minutes, in performing it; ſo is 12 *Spaces* Diſtance between the two *Movers*, (which is when they are together again) or a whole Revolution, to the Time correſpondent, *viz.* $5^h\ 5^m\frac{5}{11}$ at the next *Conjunction*.

Again, as 11 Spaces between the two Movers, is to 60 Minutes of Time, ſo is 6 Spaces to $32^m\frac{8}{11}$, at next *Oppoſition*.

Number

Number of Conj. or Opp.	Conjunctions. h m	Oppositions. h m	Quarters. h h
1	1 5 5/11	12 32 9/11	12 16 4/11
2	2 10 10/11	1 5 5/11	12 32 8/11
3	3 16 4/11	1 38 2/11	12 49 1/11
4	4 21 9/11	2 10 10/11	1 5 5/11
5	5 27 3/11	2 43 7/11	1 21 9/11
6	6 32 8/11	3 16 4/11	1 38 2/11
7	7 38 2/11	3 49 1/11	1 54 6/11
8	8 43 7/11	4 21 9/11	2 10 10/11
9	9 49 1/11	4 54 6/11	2 27 2/11
10	10 54 6/11	5 27 3/11	2 43 7/11
11	12	6	3

When a Clock or Watch goes exactly 12 *Hours too fast, it may then be said to be right.*

As the *Difference* between the Moon and Sun's mean Motion, is to the Time of that Motion, so will 12 Signs Distance asunder, or a Revolution between them, be to the Time of a *mean Lunation*, or one Conjunction to another of those Luminaries.

Mr. *Thomas Wilkins*, of *Hexham*, answered the above *Watchmaker's Question* analytically; as did Mr. *John Smith* of *Hexham*, and Mr. *Lyon* of *Margate*; but Mr. *William Pen*, of *Chalfont St. Peter's*, *Bucks*, gave the Solution by *common Arithmetic*.

XXI. Question 250, *answered by Mr.* Thomas Walker.

THE *natural* Sine of the *ascensional* Difference divided by the *natural* Tangent of the Sun's Declination (Radius being 1) gives the Latitude sought; which, in this Case, is 49° 0′ 20″, nearly. W. W. R.

The same answered by Mr. Edward Johnson, *of* Hull.

PUT $x =$ asc. Diff. in Time, then *per* Quest. $x + 6$ Hours $= \overline{6h - x} \times 2$, $\therefore x = 2$ Hours or 30°. Whence, putting $t =$ Tan. 29° 29′, $s =$ Sine 30°, $= \frac{1}{2}$ Radius; and $y =$ Tan. Lat. we have by *Spherics*, $y = \frac{s}{t}$, or $\frac{1}{2t} = 1{,}150$, *&c.* the Nat. Tan. of 49°, the *required Latitude*.

Mr. *John Harwood*, of *Newmarket*, says, that, by the Globe, the *shortest* Day is equal to Half the longest at *Quebec*, *Buda*, and all Places in the Latitude of 47°. —— Thus much differs the Globe from Calculation, *viz.* 2° less.

XXII. Question 253, *answered by Mr.* Isaac Tarrat.

LET $x =$ Time from *Midnight*, then $12 - x =$ Time from *Noon*; but $\frac{4x}{5} = \frac{36 - 3x}{8}$ *per Question*. Whence $x = 3\frac{39}{47}$ Hours. W. W. R.

Mr.

Mr. *William Lakeland* anſwered it in the ſame Manner; as did Mr. *Walker* of *Yorkſhire*.

Mr. P. *Antrobus* puts $a =$ Hours from Noon, then $12-a$ will be the Time from Midnight. But $\frac{3}{8}a = \frac{4}{5} \times 12-a$, whence $a = \frac{384}{47} = 8^h \frac{8}{47} = 8^h\ 10^m\ 12^s\ 45^{th}$ from Noon, or $3^h\ 49^m\ 47^s\ 15^{th}$ Morning. W. W. R.

Mr. *Thomas Walker* anſwered this Queſtion as above; as did Mr. *Thomas Marſhall* of *Bleuchland*, Mr. *Robert Stainton* of *Wincheſter*, Mr. *Thomas Wilkins* of *Hexham*, Mr. *Lyon* of *Margate*, Mr. *Joſeph Scott*, Mr. *William Pen* of *Chalfont St. Peter's*, *Bucks*, Mr. *Alexander Rowe*, Mr. *Thomas Sadler*, Mr. *James Brown* of *Newmarket*, and ſome Others.

XXIII. QUESTION 254, *anſwered by Mr.* Tarrat.

BY Table in *Royal Aſtronomer*, P. 188, in *December*, when the *Golden Number* is 6, the mean New Moon happens on the 25th Day of *December*. When the *Golden Number* is 6, you will ſee by Table P. 150, ſince 1700, under 15, 34, 53, 72, and 91 Years; therefore in 1772, N. S. the *New Moon* next happens on the 25th of *December*, as required by *Queſtion*. So eaſy a Method of determining the Anſwer Nothing but the *Royal Aſtronomer* could have helped me to.

N. B. The mean New or Full Moon happens ſooner by 14 Days exactly in 4 *Julian* Years. — See *Royal Aſtronomer*, P. 122.

Thoſe who would determine exactly when the true New Moon happens from the Time of the Queſtion, may try the *lunar Equations* to the mean *New Moons* every 19 Years from 1772, (when the Golden Number is 6, or any other Golden Number if he finds that not agree,) according to the Method ſhewn at P. 392. *Royal Aſtronomer*, and they will find ample Satisfaction; and the ſame Method may be purſued to other *Month-days*, when a *New Moon* is required to happen.

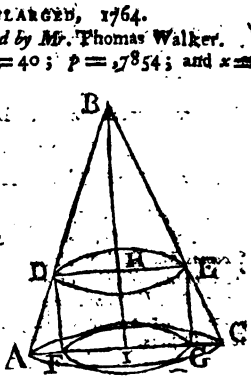
XXIV. QUESTION 255, *anſwered by Mr.* Alexander Rowe, *of* Reginnis, *near* Penzance, *in* Cornwall.

PUT $x = 3{,}67$, then *(by a Table of Logarithms)* I find an *Error* of $3{,}15$ *too much*. Suppoſe $x = 3{,}65$, then by the Operation of Logarithms, I find an *Error* of $2{,}13$ *too little*. Say, as $5{,}28$ the *Sum* of the Errors : ${,}02$ the *Difference* of Suppoſition :: $2{,}13$ the Error *too little* : ${,}008$; which added to $3{,}65 = 3{,}658$ &c. $= x$, required.

XXV.

XV. QUESTION 256, *answered by Mr.* Thomas Walker.

PUT $a = BI = 50$; $b = AC = 40$; $p = ,7854$; and $x =$ HI = the greateſt Height of the required *Cylinder*; then as $a : b :: a - x : \frac{ab - bx}{a} = DE = FG$;



but by a known Theorem, the Solidity of the *Cylinder* $= \frac{b^2x^2 - 2ab^2x + a^2b^2}{a} \times px$; and which *per* Queſtion is a *Maximum*, whoſe Fluxion $\overline{3pb^2x^2\dot{x} - 4pab^2x\dot{x} + pa^2b^2\dot{x}} = a$. Reduced we get, $3x^2 - 4ax + a^2 = 0$. Therefore $x = \frac{2}{3}a \pm \frac{1}{3}a = \frac{3}{3}a = 16,6$. W. W. R.

Mr. Alexander Rowe's *Solution.*

PUT $a = 50$, $b = 40$ Inches, and $x =$ Cylinder's Diameter. *Per* ſimilar $\triangle$s, $b : a :: x : \frac{xa}{b} =$ Part of the *Cone*'s Axis extra Cylinder's Height; $\therefore a - \frac{ax}{b} =$ the Cylinder's Altitude, $\therefore px \times a - \frac{ax}{b}$ (where $p = ,7854$) $=$ its Solidity, a Maximum, or $bx^2 - x^3 = a$, a Maximum. Fluxed and reduced, $x = \frac{2}{3}b = 26,6$; Altitude $= 16,6$; and Solidity $= 9308,4$. W. W. R.

N. B. The Diameter and Altitude of the Cylinder is to the Diameter and Altitude of the Cone, as $\frac{2}{3}$ to 1, and as $\frac{1}{2}$ to 1, when the Cylinder is greateſt.

Mr. *William Wells* anſwered this Queſtion in the ſame Manner and Numbers, *viz.* the Cylinder's Height $= \frac{1}{3}$ of the Cone's Altitude; whence the Cylinder's Solidity $= 9308,3606$ *&c.*

Mr. *Thomas Wilkins* anſwered it in the ſame Manner and Numbers, making the Solidity of the Cylinder $= 9308,34$ *&c.* Mr. *John Swan* of *Burton* Free-School, *Derbyſhire*, and Mr. *Joſeph Scott*, likewiſe anſwered it. Mr. *Pen* tells how it may be ſolved.

Mr. *P. Antrobus*, Mr. *Iſaac Tarrat* of *Epſom*, Mr. *Thomas Sadler*, and ſome Others, ſolved the ſame.

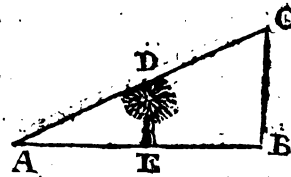
Mr. *Walker* (in his Letter dated *Stanton Bury, near Newport Pagnel, Bucks*) informs us, that the foregoing *Queſtion* is in *Hawney*'s *Menſuration*, and was not propoſed or ſent by *Cheſterfieldienſis*. Which *Miſtake* of our annexing his Name thereto, we therefore think

think it but juſt to acknowledge; ſince it might ſo happen in our Hurry of tranſcribing the Queſtions and Propoſers Names.

This Correſpondent alſo informs us of the Death of *Cheſterfieldienſis*, or Mr. *Richard Roofe*, Mathematical Maſter at *Cheſterfield*, in *January* 1763. Who was diſtinguiſhed (he ſays) by *Birchovienſis* to his *mathematical* Productions in the *Ladies Diary*. Who has left a *worthy* Character, and an *amiable* Daughter of tranſcendent Qualities, behind him!

☞ We *ſincerely* regret the Loſs of this worthy Correſpondent, who was *indefatigable* in Science, and a generous Promoter and Encourager thereof.

XXVI. QUESTION 257, *anſwered by Mr.* Iſaac Tarrat, *of* Epſom.



LET CB repreſent the *Maypole*, and ED the *Tree*; then the ∠ BAC is given 10° 12′, and *Diſtance* AB = 100 Yards; whence, by *plane* Trigonometry, AC = 101,6 and the *Maypole's* Height BC = 18 Yards: Put $a = 100$, $b = 101{,}6$, $c = 18$, $x =$ AD: Then $a - x =$ DC, (*P.* 47. *c.* 1.) $x^2 + a^2 - 2ax + x^2 + c^2 = b^2$, and $x^2 + a^2 - 2ax + x^2 = b^2 - c^2$; $\therefore 2x^2 - 2ax = b^2 - c^2 =$ *a Maximum*.

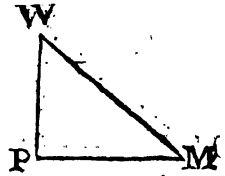
In *Maximis*, $4x^2 - 2ax = 0$; whence $4x = 2a$; $x = \frac{2a}{4} = 50$; whence, by ſim. Δs, as 100 : 50 :: 18 : 9, the Height of the *Elm Tree*. W. W. E.

Mr. P. Aſtrolus finds the *Maypole's* Height = 17,99 or 18 *Yards*; from whence he determines the *Elm's* Height 10,88 Yards.

Mr. *Wilkins* finds the *Maypole's* Height the ſame; who (for Want of conſidering the *Data* according to the Author's Meaning) thinks that the placing of the *Elm Tree* has Nothing to do in the Queſtion. Mr. *Joſeph Scott* gave the Maypole's Height likewiſe; but Mr. *Tarrat* only conſidered and anſwered the *Queſtion* as the Author meant it.

XXVIII. QUESTION 258, *anſwered by Mr.* Edward Johnſon.

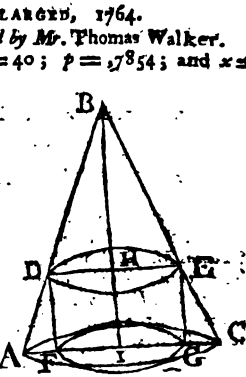
LET P be the *Place* where Mr. *Sadler* ſtood; W, *Wrenbury*; M, *Marbury* Church. Put PW = x, PM = y, then by the Nature of Sound,



and *per* Queſtion, $\frac{1}{y^2} = \frac{5}{x^2}$ $\therefore x^2 = \frac{5y^2}{3}$. But the Angle P being a right one, and WM = 2 Miles, we have $x^2 + y^2 = 4$ (WM^2): Hence $x^2 = 4 - y^2$, $\therefore \frac{5y^2}{3}$

XXV. QUESTION 256, *answered by Mr.* Thomas Walker.

PUT a = BI = 50; b = AC = 40; p = ,7854; and x = HI = the greateſt Height of the required *Cylinder*; then as a : b :: $a-x$: $\frac{ab-bx}{a}$ = DE = FG;



but by a known Theorem, the Solidity of the *Cylinder* = $\frac{b^2x^2-2ab^2x+a^2b^2}{a}$ × px; and which *per* Queſtion is a *Maximum*, whoſe Fluxion $3pb^2x^2\dot{x}-4pab^2x\dot{x}+pa^2b^2\dot{x}=a$. Reduced we get, $3x^2-4ax+a^2=0$. Therefore x = $\frac{2}{3}a \pm \frac{1}{3}a = \frac{1}{3}a$ = 16,6. W. W. R.

Mr. Alexander Rowe's *Solution*.

PUT a = 50, b = 40 Inches, and x = Cylinder's Diameter.

Per ſimilar △s, b : a :: x : $\frac{ax}{b}$ = Part of the *Cone*'s Axis extra Cylinder's Height; ∴ $a-\frac{ax}{b}$ = the Cylinder's Altitude, ∴ px × $a-\frac{ax}{b}$ (where p = ,7854) = its Solidity, a *Maximum*, or $bx^2-x^3=a$, a Maximum. Fluxed and reduced, $x=\frac{2}{3}b$ = 26,6; Altitude = 16,6; and Solidity = 9308,4. W. W. R.

N. B. The Diameter and Altitude of the Cylinder is to the Diameter and Altitude of the Cone, as $\frac{2}{3}$ to 1, and as $\frac{1}{3}$ to 1, when the Cylinder is greateſt.

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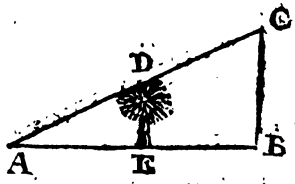
LET CB repreſent the *Maypole*, and ED the *Tree*; then the ∠ BAC is given 100° 12′, and *Diſtance* AB = 100 Yards; whence, by *plane* Trigonometry, AC = 101,16 and the *Maypole's* Height BC = 18 Yards: Put $a = 100$, $b = 101{,}16$, $c = 18$, $x =$ AD: Then $a - x =$ DC, (*P.* 47. *e.* 1.) $x^2 + a^2 - 2ax + x^2 + c^2 = b^2$, and $x^2 + a^2 - 2ax + x^2 = b^2 - c^2$; $\therefore 2x^2 - 2ax = b^2 - c^2 =$ a *Maximum*.



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Mr. *P. Aſtrubus* finds the *Maypole's* Height = 17,99 or 18 *Yards*; from whence he determines the *Elm's* Height 10,88 Yards.

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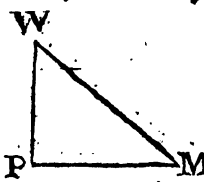
XXVIII. QUESTION 258, *anſwered by Mr.* Edward Johnſon.

LET P be the *Place* where Mr. *Sadler* ſtood; W, *Wrenbury*; M, *Marbury* Church. Put PW = x, PM = y; then by the Nature of Sound, and *per* Queſtion, $\frac{3}{x^2} = \frac{5}{y^2}$ $\therefore x^2 = \frac{3y^2}{5}$. But the Angle P being a right



line, and WM = 4 Miles, we have $x^2 + y^2 = 4$ (WM^2): Hence $x^2 = 4 - y^2$, $\therefore \frac{3y^2}{5}$

$\frac{5y^2}{3} = 4 - y^2$, whence $y = \frac{\sqrt{6}}{2} = 1{,}22474$; and consequently $x = \sqrt{4 - y^2} = \frac{\sqrt{10}}{2} = 1{,}58113$ Miles, the Diſtance of *Mr. Sadler* from each Town. W. W. R.

A Contributor, who ſtiles himſelf *Yorkſhire Jack*, ſaid the Diſtance or $y = 1{,}2246$ Miles; who alſo anſwered the *Prize Queſtion*; but as this Correſpondent hides himſelf, we cannot find him.

Mr. Walker's *Anſwer.*

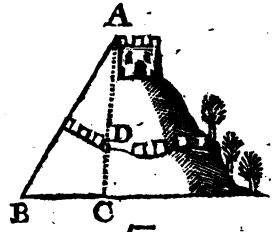
IN the above Figure, let P repreſent Mr. *Sadler*'s Station at *Norbury*; W, *Wrenbury*, and M, *Marbury*. Put $x = PM$, and $y = PW$: Then, ſince the Force of Sound decreaſes as the *Squares* of the Diſtances increaſe, and, by the Queſtion, the Triangle AMW is right-angled at P; and MW given $= 2$ Miles $= a$; (*per* 47. *e.* 1.) $a^2 = x^2 + y^2$ $\therefore a^2 - x^2 = y^2$. But, by *Data*, and Motion of Sound, as $3 : 5 :: x^2 : y^2$, $\therefore \frac{3x^2}{5} = y^2 = a^2 - x^2$, $\therefore \frac{5a^2}{8} = x^2$; whence $x = a\sqrt{\frac{5}{8}} = 1{,}5811$ *Miles*, and $y = 1{,}2247$, required.

Mr. *William Wells* anſwered the ſame, as alſo Mr. *Thomas Marſhall* of *Blencbland.*

Mr. *Wilkins*, by a Method like the above, finds the Diſtance of Mr. *Sadler* from *Wrenbury* $= 1{,}5811$ Miles, and from *Marbury* 1,2247, agreeing with Mr. *Walker*: Mr. *Lyon* of *Margate* alſo ſolved the Queſtion; as did Mr. *Joſeph Scott*, Mr. *Iſaac Yarrat* of *Epſom*, Mr. *P. Antrobus*, Mr. *Alexander Rowe*, and Others.

XXVIII. Queſtion 259, *anſwered by Mr.* Thomas Sadler.

LET A repreſent the Caſtle, AB the ſmall Rock, $b = 16\frac{1}{2} = a = 8$, $x =$ the Caſtle's Altitude $= CA$, $y = BC$; whence it is evident by Mechanics, $\sqrt{\frac{x}{b}}$ will expreſs the Time the Stone will take to fall down the perpendicular Height AC. But as $x : \sqrt{\frac{x}{b}} :: \sqrt{b^2 + y^2} : a$, the Time of its falling down AB, whence $ax = \sqrt{\frac{x}{b}} \times \sqrt{x^2 + y^2}$ $\therefore y^2 = ba^2x - x^2$. Likewiſe $xy^2 = ba^2x^2 - x^3$, a *Maximum*, *per* Queſtion. In Fluxions, $2ba^2x\dot{x} - 3x^2\dot{x} = 0$. Conſequently, $x =$



$x = \frac{2}{3}ba^2 = 687,36 = CA$; the Rock and Caſtle's Altitude $= 229,12$ Yards, the ſame as quoted by Miſs *Podmore* at the Bottom of her Queſtion. W. W. R.

The PRIZE-QUESTION *anſwered by Mr.* Thomas Marſhall, *of* Blenchland, *near* Hexham.

THE Value of all ſuch *analytical Fractions* (the Numerator and Denominator vaniſhing when the variable Quantity x is perfectly equal to the *conſtant* Quantity a) may be eſtimated by ſuppoſing x a very ſmall Difference leſs than a. The correct Value of the Fraction, from the *infinitely ſmall Difference* between x and a, or none at all, is vaniſhing, with the Numerator and Denominator, when x is perfectly equal to a, will be therefore repreſented by the *Fluxion of the Numerator divided by that of the Denominator*; x being then made equal to a: For the infinitely ſmall *Differences* of Quantities are *nearly* as their Fluxions, and *ultimately*, at vaniſhing, are *correctly* ſo.

Given $\frac{x \times \overline{9a^3 - x^3}|^{\frac{1}{3}} - 2ax}{a - \overline{ax^2}|^{\frac{1}{3}}}$; whereof the Fluxion of the

Numerator $= \dot{x} \times \overline{9a^3 - x^3}|^{\frac{1}{3}}, -x^3\dot{x} \times \overline{9a^3 - x^3}|^{-\frac{2}{3}}, -2a\dot{x}$

Denominator $= -\frac{2a\dot{x}}{3} \times \overline{axx}|^{-\frac{2}{3}}$

(making $x = a$) $= \frac{-a\dot{x}}{4}$ divided by $\frac{-2\dot{x}}{3} = \frac{3a}{8} =$ (when $a =$ 100000) 37500 *l.* the *Captain*'s Prize-Money, required.

The ſame anſwered by Mr. E. Johnſon, *of* Hull.

LET the given Fraction $\frac{x\sqrt[3]{9a^3 - x^3} : -2ax}{a - \sqrt[3]{axx}} = \frac{N}{D}$.

Since the Numerator and Denominator both vaniſh when $x = a$, we need only compute $\frac{\dot{N}}{\dot{D}}$; becauſe, in all ſuch Fractions, the *ultimate Ratio* of N to D is that of $\dot{N}$ to $\dot{D}$, when $x = a$.

But $\dot{N} = \frac{9a^3x^2\dot{x} - 2x^3\dot{x}}{9a^3x^3 - x^6|^{\frac{2}{3}}}$; $-2a\dot{x}$; and $\dot{D} = \frac{-2ax\dot{x}}{3 \times \overline{ax^2}|^{\frac{1}{3}}}$;

Whence, by Diviſion, we get $\frac{\dot{N}}{\dot{D}} = \frac{-3 \times \overline{ax^2}|^{\frac{2}{3}}}{2ax} \times$

$\frac{9a^3x^2-2x^5}{9a^3x^3-x^6\overline{|}^{\frac{2}{3}}} - 2a =$ (when $x=a$) $\frac{3a}{8} = 37500$*l.* the Captain's Share of the Prize. W. W. R.

Another Correſpondent (ſtiling himſelf *Yorkſhire Jack*) anſwered this Queſtion in the ſame Manner; but as he conceals himſelf, he cannot expect we ſhould find him.

Remark by the Author.

PUTTING the given Fraction $\frac{x \times \overline{9a^3-x^3}\overline{|}^{\frac{1}{3}} - 2ax}{a-ax\overline{|}^{\frac{1}{3}}} = \frac{3a}{8}$, reduced &c $x \times \overline{9a^3-x^3}\overline{|}^{\frac{1}{3}} = 16ax+3ax-3x \times \overline{axx}\overline{|}^{\frac{1}{3}}$; and (making $x=a$) $16aa=19aa-3aa=16aa$; a *Proof of the foregoing Solution being true.*

By *Diviſion* (when $x=a$) $\frac{a-x}{a-x} = 1$, $\frac{a^2-x^2}{a-x} = a+x = 2a$;

$\frac{a^3-x^3}{a-x} = a^2+ax+xx = 3a^2$; $\frac{a^4-x^4}{a-x} = a^3+a^2x+ax^2+x^3 = 4a^3$, &c.

By *Fluxions*, $\frac{-\dot{x}}{-\dot{x}} = 1$, $\frac{-2x\dot{x}}{-\dot{x}} = 2x = 2a$; $\frac{3x^2\dot{x}}{-\dot{x}} = 3x^2 = 3a^2$; $\frac{-4x^3\dot{x}}{-\dot{x}} = 4x^3 = 4a^3$, &c. agreeing with the firſt Concluſions.

*** The Names of the *three Competitors* for the Prize (Mr. *Johnſon*, Mr. *Marſhall*, and *Yorkſhire Jack*) being wrote on *three Pieces* of Paper, then doubled up, and drawn as Lottery Tickets by *Amanda* out of *Amicus*'s Hat, the firſt drawn, or *Prize* Ticket, contained Mr. *Marſhall*'s Name, of *Blanchland*, near *Durham*, who therefore claims the PRIZE, equivalent to 12 former *Palladiums*.

XXX. Queſtion 262, anſwered by Mr. Edward Johnſon.

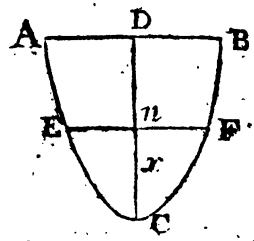
PUT $ny=x$, then, by Subſtitution, the 1ſt Equation becomes $\frac{n^2+n}{n} = 2,3625 = a$, $\therefore n^2+1 = an$; ſolved $n=1,25$. By the ſecond Equation $\frac{ny}{y-\frac{1}{n}} = 2,00000$. Whence $y = \frac{\frac{b}{n}}{\frac{b}{n}-n} = 40$, and $ny = 50$, the required Ages. W. W. R.

Mr. *Saunderſon*, of *Hatborough*, anſwered the ſame, as did the Propoſer, Mr. *Paul Sharp*.

XXXI.

XXXI. QUESTION 262, *answered only by the Proposer*, Mr. Paul Sharp, *of* Biddenden, *in* Kent.

DEMONSTRATION. Let ABC *(in the Figure annexed)* represent the Vessel with its *Vertex* downwards. Put the *Axis* DC $= a$, *Radius* of the Base $= b$; and the Time in which a Cylinder, whose Height and Base are equal to the *Axis* and Base of the *Conoid*, will empty itself through the same *Hole* in the Bottom, when full of Water, with its first or greatest Velocity, $= t$; also let y denote the Time of the Vessel's emptying; and $x = Cn$ = any *variable* Altitude of the running out Water's Surface. Then, *per Conics*, as



$a : b^2 :: x : \frac{b^2x}{a} = \overline{Bn}^2$ $\therefore \frac{cb^2x}{a}$ = Area of the circular Base at the *Altitude* Cn (or x,) whence $\frac{-cb^2x\dot{x}}{a\sqrt{x}}$ = Time of emptying to that Altitude. But as $a : t :: -\dot{x} : \frac{-t\dot{x}}{a}$ = Time at the *first* Instant: Whence, as $\frac{-t\dot{x}}{a} : \frac{-cb^2\dot{x}}{\sqrt{a}} :: \dot{y} : \frac{-cbx^2\dot{x}}{a\sqrt{x}}$, $\therefore \frac{tx\dot{x}}{aa\sqrt{x}} = \frac{-\dot{y}}{\sqrt{a}}$, which reduced gives $\dot{y} = \frac{-tx\dot{x}}{a^{\frac{1}{2}} \times x^{\frac{1}{2}}}$, $\therefore y = \frac{-a}{3}t \times \frac{x^{\frac{3}{2}}}{a^{\frac{3}{2}}}$; but in the *Point* D, $y = 0$, and $x = a$, $\therefore y = \frac{2}{3}t - \frac{2}{3}t \times \frac{x^{\frac{3}{2}}}{a^{\frac{3}{2}}}$. But $x = 0$, conseq. $y = \frac{2t}{3}$, the *correct* Fluent, or Time *required*.

N. B. By the same Way of Reasoning, when *inverted*, putting $x = Dn$, b, t and y denoting the same as before, we shall have $\dot{y} = \frac{tx\dot{x} - ta\dot{x}}{\sqrt{a^3x}}$, and $y = \frac{4}{3}t$, the *correct* Fluent; equal to the Time of emptying, with the *Base* downwards; which is *exactly* double the former Time. Q. E. D.

Corollary 1. Hence the Time of emptying a Vessel in Form of a *parabolic Conoid*, when full of Water, with its *Vertex* downwards, is $= \frac{2}{3}$ of the Time of its circumscribing Cylinder's emptying through the

the ſame *Oriſice*. And the Time of emptying with its Baſe downwards is $= \frac{2}{3}$ of that Time.

Corollary 2. The Time of emptying any *Fruſtum* of the ſaid *Conoid*, with the Baſe downwards, is $= 2t - \frac{2tb}{3c+3b}$. And, when *inverted*, $= 2t \times \frac{b}{3b+x} + \frac{c}{b+c}$; b being the Height of the *Fruſtum*, $c =$ the Part of the *Axis* cut off, and the Time of emptying its circumſcribing Cylinder, with its firſt or *greateſt* Velocity $= t$.

XXXII. Question 263, *anſwered by Mr.* Edward Johnſon, *of* Hull, *only*.

THE three Fractions $\frac{71}{2}$, $\frac{369}{2}$, $\frac{409}{2}$, or the 3 whole Numbers, — 184, 200, and 584, are in arithmetical Progreſſion, and will anſwer the Queſtion. For the Sum of every two is a Square, as the Queſtion requires. — But as the *leaſt Number*, in both Caſes, is Negative, the Beauty of the Queſtion is deſtroyed, and therefore I ſhall not trouble you with the *Inveſtigation*.

XXXIII. Question 264, *anſwered by Mr.* Iſaac Tarrat, *of* Epſom.

WHEN the *Dominical Letter*, O. S. is F, it is *evident*, by *Tab. P.* 66, *Pall.* 1763, that the *Sun's Cycle* muſt be 7, 18, or 24. Hence, the *Moon's Cycle* being 9, and *Indiction* 9, given, trying the *Sun's Cycle* 7, we find, by *Rule*, P. 160. *R. Aſtron.* (4845 *by the Sun's Cyle*, 4200 *by the Moon's Cycle*. 6916 *by Indiction, dividing the Sum of their Products by* 7980 *for the* Julian *Period to remain*) that the *Julian* Period correſpondent is 6279, anſwering to 1566 *current* ſince, or 6415 *current* before *Chriſt*, when the *Moon's Cycle* and *Indiction* are 9 each; and *Julian* Dominical Letter F. — But then we find (by *Tab. P.* 3. *Pall.* 1762) the Dominical Letter, N. S. to 1566 ſince *Chriſt*, is B inſtead of U given; and to 6415 before *Chriſt*, E inſtead of D. — *Yet, by adding and ſubtracting a Number of* Julian *Periods, Dates may be found before and ſince* Chriſt, *to anſwer all the required Circumſtances of the Queſtion, to Sun's Cycle* 7.

But, by the ſaid *Rule*, trying 18 the Sun's Cycle, and the Moon's Cycle and Indiction 9 each, we have 3714 *Julian* Period, or 1000 before *Chriſt*, when the *Dominical Letter* O. S. is F, (ſee *Pal.* 1762, P. 4.) and D for N. S. (by ſame *Pal.* P. 3.) which 3 *firſt* Circumſtances happen again in a *Julian* Period of 7980 Years, *viz.* in 6981 *ſince Chriſt* (and *not before*,) when the *Dominical Letter* is G for N. S. inſtead of D given, (by *Tab. P.* 3. *Pal.* 1762.) Therefore, to have it D, add a *Julian Period* of 7980 Years to 6981 *ſince Chriſt*, and the Sum is 14961 *current* ſince *Chriſt*, when all the 4 Circumſtances *ſooneſt* happen, after the 1000th Year current before *Chriſt*.

N. B.

N. B. *There are many other Dates to be assigned for the same 4 Circumstances to happen by a Revolution of the same* Julian *and* Gregorian *Letters in* 2800 *Years, which being multiplied by* 7980, *a* Julian *Period, in which all the* 3 *first Circumstances can happen, produce a* Period *of* 22344000 Years. W. W. R.

XXXIV. Question 265, *answered by Mr.* Tarrat, *of* Epsom.

BY *Tab.* P. 66. *Pal.* 1763, when the *Dominical Letters* O. S. are FE, the *Sun's Cycle* is 13; hence the *Moon's Cycle* and *Indiction* are 13 each. —— By *Rule*, P. 160, *Royal Astronomer and Navigator*, the *Julian Period* is then 13, answering to 4701 current before *Christ*, when the *Julian Dominical Letters* are FE, *Moon's Cycle* and *Indiction* 13 each; but the *Dominical Letters*, N. S. (by *Tab.* P. 3. *Pall.* 1762) we find CB instead of DC given. Add 9 *Julian* Periods to this *Date* (in each of which Periods the 3 first Circumstances return) and the *Sum* will be 76521 *before Christ*, when the *Gregorian* Dominical Letters are DC as given. Now, going 10 *Julian* Periods forward to 3280 current *since Christ*, the *Julian* Dominical Letters are then FE, Moon's Cycle and Indiction each 13; but the Dominical Letters, N. S. are GF instead of AG, given. —— To which *Date* of 3280, add 2 *Julian* Periods, of 15960 Years, and the *Sum* will be 19240 *since Christ*; when all the required Circumstances soonest happen, from 76521 *before Christ*, *viz. Julian* Dominical Letters FE, *Gregorian* AG, Sun and Moon's Cycle, and Indiction, 13 each. W. W. R.

No other *Rule* and Method can be found so *quick*, *certain*, and *easy* as the above, by which the Answer is given. *Can* Kennedy's *or* Rivet's *Rules answer these Things?*

XXXV. Question 266, *answered by Mr.* T. Marshall, *of* Blenchland.

BY P. 212, *Jones's Synopsis Palmeriorum*, if *a* denotes an Annuity (of 10 *l.*) x = the Amount of 1 *l.* and its Interest for a Year (= 1,05), s = a Debt (= 100,) and n = the Years in which that Debt is to be payed off, then $n = \frac{l.a - l.a + s}{l.x} - \frac{sx}{} =$

$\frac{l.10 - \overline{l.110 - 105}}{l.1,05} = \frac{l.10 - l.5}{l.1,05\text{ c.}} = \frac{,30103000}{,0211893} = 14,2066$ Yrs.

Otherwise.

BY Mr. *Emerson's* new Tables of *Interest*, Example 14, Page 168, of his newly published *Improved Arithmetick* and *Geometry*, sold by Mr. *Nourse*: As 10 *l. Annuity* or Rent, to 100 *l.* ready Money, so 1 Rent to $\frac{100}{10} = 10$, the *present* Worth of 1 *l. Annuity*, for an unknown Time.

Take a Number of Years by Guess, and find the Amount of 1 *l. Annuity*, by *Tab.* IV. *compound Interest*; and also the Amount of 1 *l.* for those Years, at *compound Interest*, by *Tab.* III. dividing the *former* by the *latter*, for the present Worth of 1 *l. Annuity*; repeating the *Operation*, till by *Trial and Error*, the Result agrees with the above

above *present Worth* of 1 *l.* Annuity, *viz.* 10 *l.* for Time *unknown*.

Pref. Worth

Amt of 1*l.* *Ann.* for 14 Yrs. *comp. Int.* 5 *per Ct.* = 19.59863 = 9.895

Amt of 1*l.* at *comp. Int.* 5 *per Ct.* for 14 Yrs. = 1.97993
Amt of 1*l.* An. for 15 Yrs. *comp. Int.* 5 *per Ct.* = 21.57856 = 10.379

Amt of 1*l.* at *comp. Int.* 5 *per Ct.* for 15 Yrs. = 2.07893

Say, As ,481 : 1 Year :: ,102 : ,212 to be added to 14, = 14,21 Years, *fere*, as above, by *Jones's Synopsis*, without the Use of Logarithms. W. W. R.

SOLUTION to QUESTION VI. Palladium 1762. *By* Montmenien.

IT is extremely eaſy to find the Latitude 54° 56′ 4 where *Sirius* and *Aldebaran* ſet together; and the *Latitude* may be found as eaſily when *Sirius* and *Aldebaran* riſe together; and alſo when they are in a *perpendicular Line*, and either of them riſing.

Mr. T. Walker *gives this analytical Solution.*

LET t and d = Tangents of the *Declination* of *Sirius* and *Aldebaran*, reſpectively. Alſo let a and r = their Sines; and s and p = Coſines of their right Aſcenſions, reſpectively. Put x = *Tangent* of the *required* Latitude. Then, $1 : x :: t : tx$ = S. *aſcenſional* Difference of *Sirius*. Moreover, $\sqrt{1 - t^2x^2}$ = its Coſine. And, by a known *Theorem* in Spherics, $a\sqrt{1 - t^2x^2} - stax$ = Sine of the oblique Deſcenſion of *Sirius*. And, by the ſame *Method* of Reaſoning, we have $r\sqrt{1 - d^2x^2} + dpx$ = Sine of oblique Deſcenſion of *Aldebaran*. Whence, by Queſt. $a\sqrt{1 - t^2x^2} - tax = r\sqrt{1 - d^2x^2} + dpx$. From which Equation the Value of x may be determined.

The ſame anſwered by Mr. Thomas Sanderſon *of* Harbotough.

BY *Tables* in the *Royal Aſtronomer*, *Sirius*'s Right Aſcenſion 98° 41′ 3. *Declination* 16° 22′ 58″ South; and *Aldebaran*'s right Aſcenſion 65° 36′, *Declination* 16° 0′ 51″ N. to the Year 1763.

If *Sirius* and *Aldebaran* had no Declination, then *Aldebaran* would ſet as much before *Sirius*, in all Latitudes as his right Aſcenſion is leſs than *Sirius*'s, or 33° 6′ turned into Time. —— But *Sirius*'s Declination being South, his aſcenſional Difference muſt be *ſubtracted* from his right Aſcenſion to find the Point of the Equator ſetting with *Sirius*. And *Aldebaran*'s aſcenſional Difference muſt be *added* to his right Aſcenſion to find the Point of the Equator therewith ſetting; which *Difference* and *Sum* muſt be equal. Hence, putting

$x =$

x = Tang. Lat. *required*; a = Tang. 16° 22′ 58″; b = Tang. 16° 0′ 54″ = Sine 33° 6′. By *Spherics*, $1 : x :: a : ax$ = Sine asc. Dif. of *Sirius*. And, as $1 : x :: b : bx$ = Sine asc. Dif. of *Aldebaran*. Now, by a known *Theorem*, in *Spherics*,

$ax\sqrt{1 - bbxx} + bx\sqrt{1 - aaxx} = c$. From which Equation x = 44° 25′ 30″ Lat. North, where *Sirius* sets with *Aldebaran*. W. W. R. — As the *above Lat.* dif. fr. 54° 56′ before found, the Equation muſt be wrong or wrong ſolved.

CORRECTIONS *by Mr.* Alexander Rowe.

SOLUTION, P. 40, *Pal.* 1763. Let an *Abſciſſa* = 3 = a; and Semi-ordinate 2 = b; whoſe Curve = 3,7684 = c; and x = the required Abſciſſa. *Per* ſimilar Figures, $a : b :: x : \frac{bx}{a} = \frac{2}{3}x$ the required Ordinate; and, $a : c :: x : \frac{cx}{a} = \frac{1}{2}$ the required Curve. Moreover *(per Fluxions)* $\frac{2}{3}x$ = Breadth of the greateſt inſcribed Parallelogram; and by *Parabolic* Property, [*a new Diſcovery, I believe never before publiſhed*] $x^3 : \frac{b^2x^2}{a^2} :: \frac{4x}{3} : \frac{4b^2x^2}{3a^2}$ = Square of the inſcribed Parallelogram's Length, $\therefore \frac{2bx}{1,73205\,a}$ × $\frac{2}{3}x = \frac{2cx}{a}$, *per* Queſt. or $\frac{2bx}{5,19615\,a} = \frac{c}{a}$. Hence, $x = \frac{5,19615\,c}{2b} = 4,8953$, Ordinate = 6,527: Whence, the parabolic Area = 21,302, and Curve = 12,2983, = Area of the *greateſt* inſcribed Parallelogram. W. W. R.

Mr. Thomas Walker, of *Stanion Bury*, near *Newport Pagnel, Bucks*, [or *Buckſonſis*] makes the following *Remarks* on ſeveral Queſtions and Solutions ſent us by *Mr. Rowe*.

In Palladium, 1763.

HE ſays, *Queſt.* 3d is ſimilar to *Queſt.* 69, *Ladies Diary*, 1719. *Queſt.* 4. is eſſentially the ſame as Prop. 16, P. 92, *Emerſon's Fluxions*; where is an *elegant* Conſtruction of this Caſe.

Queſt. 18. is the very ſame as *Queſt.* 150, *Ladies Diary*, 1730. — That Some ſhew their Skill in turning an *old Coat* to Advantage; altering the Shape of it a *little*, by adding the Word *Conic* to *Parabola*; an Expreſſion he never ſaw before; [*though all Parabolas are called* conic *Sections, and therefore are* conic *or* conical.

That *Queſt.* 10th, ſame *Pall.* is *eſſentially* the ſame as Queſt. 158, *Martin's Magazine*, whence that Queſtion and its Solution, he ſays, are taken. Who refers us to the *Gentleman's Diary* for 1738, Queſt. 8, and its Solution at P. 32, next *Diary*. [See Mr. *Walker's Solution* to Queſt. XV. this *Pall.* compared with Mr. *Chapman's* Solution.]

*** Whoever ſets up *Error* for *Truth*, it is reaſonable they ſhould be confuted; that Truth may be eſtabliſhed; Mr. *Walker* ſhould name the *Tyro* he mentions, (ſtrutting in borrowed Plumes in the *Palladium* 1763, by Example of their *Leader*) that *ſome may be ſuſpected of wearing falſe Characters*, or *Tinſel* for ſolid Gold.

☞ Mr. *J. Knowles*, of *Epſom*, obſerves, in Anſwer to Mr. *Hayden's* Objections againſt him, (in P. 18. *Pall.* 1763,) that he never was guilty of the *Sin* of *Plagiariſm*, and the Things there laid to his Charge. Who ſays, he ſubmits the ſame to the Judgment of the capable and impartial; but not to the Candour and Veracity of the *Student* of *Hertford College*; whoſe Abilities (he ſays) in many *Inſtances* of his *remarkable* Accompliſhments and diſtinguiſhed Qualities are too well *known* at *Epſom* to be diſputed. Who therefore refers the *Curious* for farther *Particulars* to the preſent Place of that worthy Author's *Abode*, at *Leather-Breeches College*, in *Cheſhunt*, *Hertfordſhire*.

A full, complete, *and* true ANSWER, *to Mr.* RIVET's aſtronomical Queſtion, *at P.* 170, Palladium 1763. *By* Calſuſticus, *Chamber Counſellor in the* Middle Temple, London.

THE *Sun* evidently enters *Libra*, each Year, preciſely at Noon to a Moment, under ſome Meridian: Conſequently has entered, and will continue to enter, that Sign, preciſely at Noon to a Moment, in each Year of every King's Reign ſince the Creation. W. W. R.

*** If the Queriſt ſhould object, that he meant the Meridian of *Greenwich Obſervatory*, or ſome other particular Meridian, where he required the Year and Month-day of the Sun's Entrance into *Libra*, at Noon, *preciſely* to a Moment; the *Anſwer* will be, that as his *Quere* publiſhed was a true Copy from his Letter, not containing Words of any ſuch Import, and as he made no Mention where a *Time-meaſurer* could be had to meaſure Moments *(or the leaſt Part of Time poſſible,)* he therefore would be nonſuited by his *Plea of Error*, in requiring an *impoſſible Anſwer*: Since there is no *exact Commenſurability*, in any *finite* Time, between the *true ſolar* and *anomaliſtic* Year. Though after a certain Number of Revolutions, to be determined from the *Royal Aſtronomer*, there will be a near *Coincidence* with the ſame Place of the *Earth's* Orbit, or Sun's Place in the *Ecliptic*.

TO determine the Number of Leap-Years back or forward, when the Sun did enter and will enter Libra, *nearly, at Noon, according to mean Motion.*

Since Cbr.	☉ in ♎ *Sep.* 11, O.S h m s	m	☉ in ♎ *Sep.* 12, O.S h m s	m	*To find the*
1760	+ 3 16 38	= + 197	−20 43 22	= −1243	*Years back, when the Sun nearly entered* ♎ *at Noon, by a Number of whole Days, and as many Minutes over, as he was short of* Libra,
1761	+ 9 5 41	= + 546	−14 54 19	= − 894	
1762	+14 54 25	= + 894	− 9 5 35	= − 546	
1763	+20 43 1	= +1243	− 3 16 59	= − 197	

September 12, 1760, 61, 62, *or* 63, *O. S.*

By MULTIPLES, DIVISORS, *and* REMAINDERS.

Let x = No. of 4 Julian Years back from { 1760, 1761, 1762, 1763 } respectively.

Take the mean *solar Year* = $365^{d}\ 5^{h}\ 49^{m}$ *in nearest Minutes.*

Then, in { back, forw. } 4 Jul. Yrs. Sun enters { m, 44 } *Equinoxes* { later, + sooner, −

Whole Nos. Whole Nos.

And 1. $\frac{44x-1244}{1440} = \frac{11x-311}{360}$, 1 Min. more than the Time of *Equinox.*

2. $\frac{44x-892}{1440} = \frac{11x-223}{360}$, 2 Min. less than Time of *Equinox.*

3. $\frac{44x-544}{1440} = \frac{11x-136}{360}$, 2 Min. less than Time of *Equinox.*

4. $\frac{44x-196}{1440} = \frac{11x-49}{360}$, 1 Min. less than Time of *Equinox.*

N. B. This Nearness is used to get x the lowest *whole* Number possible.

33 Times 1st wh. Numb. = $\frac{363x-183}{360}$ − 28, a whole Numb.

− $\frac{360x}{360}$, a whole Number.

Rem. $\frac{3x-183}{360}$, wh. Numb. 4 Times which = $\frac{12x-372}{360}$ − 1, a whole Number.

Take away 1ſt or $\frac{11x-311}{360}$, and there rem. $\frac{x-61}{360}$, wh. Numb. $= a$; whence $x = 360a + 61$.

Here, when $a = 0$, $x = 61$ Lp. $= 244$ Years.
$a = 1$, $x = 421$ Lp. $= 1684$ Years.
&c. back from 1760.

Again, 33 Times 2d wh. Numb. $= \frac{363x - 159}{360} - 20$, a wh. Number, $- \frac{360x}{360}$, a whole Number.

Rem. $\frac{3x - 159}{360}$, wh. Numb. 4 Times which $= \frac{12x-276}{360} -$ 1, a whole Number.

Take away $\frac{11x-223}{360}$, there rem. $\frac{x-53}{360}$, a whole Number, $= a$, whence $x = 360a + 53$.

When $a = 0$, then $x = 53$ Lp. $= 212$ Years.
$a = 1$, then $x = 413$ Lp. $= 1652$ Years.
&c. back from 1761.

By the ſame Way of Reaſoning, for $\frac{11x-136}{360}$, a whole Numb. $x = 360a + 176$.

When $a = 0$, then $x = 176$ Lp. $= 704$ Years.
$a = 1$, then $x = 536$ Lp. $= 2144$ Years.
&c. back from 1762.

Alſo for $\frac{12x-49}{360}$, a whole Numb. $x = 360a + 299$.

When $a = 0$, then $x = 299$ Lp. $= 1196$ Years.
$a = 1$, then $x = 659$ Lp. $= 2636$ Years.
&c. back from 1763.

If the ſecond Equinox had been the 12th of *September*, —896 Minutes, 2 Minutes more than Time. Then $x = 184$ Lp. $=$ 736 Years back from 1761. Third Equinox the 12th of *September*, —548 Minutes, 2 Minutes *more* than Time; then $x = 307$ Lap, $= 1228$ Years, *back* from 1762.

☞ When the *Minutes* the *Equinoxes* want of *September* the 12th, to be ſubtracted from $44x$, cannot be divided by 4, they muſt be reduced thereto, or the Queſtion cannot be ſolved ſo near; for to ſolve $\frac{44x - 1243}{1440}$, a whole Number, is impoſſible.

Hence,

Radical Dates	Yrs.	⊙ in ♑ at Noon		d	O.S. d	d	N. S. d
Hence, 1760—	244	=1516	*Sept.*	12	+1	=13	*Sept.* 23
1761—	212	=1549	*Sept.*	12	+1	=13	*Sept.* 23
1762—	704	=1058	*Sept.*	12	+5	=17	*Sept.* 23
1763—	1196	= 567	*Sept.*	12	+9	=21	*Sept.* 22

	m	Lp. Yrs.	d		m
For	44 ×	61	= 1	+	1244
	44 ×	53	= 1	+	892
	44 ×	176	= 5	+	544
	44 ×	299	= 9	+	196

And as the Minutes above the 11th and under the 12th of *September*, when the Sun entered *Libra*, for the Years 1760, 61, 62, and 63, are the Complements of one another to 24 Hours, and the *Reverſe* of one another for thoſe Years; therefore,

Radical Dates	Yrs.	⊙ in ♑ at Noon		d	O.S. d	d	N. S. d
1760+	1196	=2956	*Sept.*	11	−9	= 2	*Sept.* 22
1761+	704	=2465	*Sept.*	11	−5	= 6	*Sept.* 22
1762+	212	=1974	*Sept.*	11	−1	=10	*Sept.* 23
1763+	244	=2007	*Sept.*	11	−1	=10	*Sept.* 23

	m	Lp. Yrs.	d		m
For	44 ×	299	= −9	−	196
	44 ×	176	= −5	−	544
	44 ×	53	= −1	−	892
	44 ×	61	= −1	−	1244

N. B. The above Times are but a *near Computation*; becauſe the mean Year was not taken *exact*, and becauſe, if it had, the Sun's mean *Anomaly* (on which the Sun's Equation of his mean to the true Place depends) changes by 1′,02497839 Minutes of a Degree = 1′ 1″ 29‴ 55iv. 20v. *leſs* in every mean Year or Revolution *forwards*, or as much *more* for every mean Year or Revolution back. And therefore, though the Sun's mean and true Place returns the ſame in every annual Revolution, yet the Sun's *Equation* being different, he cannot return to the ſame Point of the Ecliptic, according to the Difference of mean ſolar and Julian Years; nor yet truly enter any particular Sign at the mean or true Noon preciſely on any *Month-day*, deduced from mean Motion. And therefore, to compenſate, in a ſmall Meaſure, for the *Error* between *mean* and *true* Motion, in the Difference of the Sun's mean Anomaly (which this Computation makes not to alter) 365d 5h 49m, is aſſumed for the true inſtead of 365d 5h 48m 54s 46th 19fo, ſee *Royal Aſtron.* P. 120, the obſerved Length of the mean Year, being nearly 5 *Seconds* aſſumed too much; which in a *ſmall* Number of Years back or forward, does not vary much from the Truth; but is quite wide of Truth in a *great* Number of Years, and eſpecially for the *vernal Equinoxes* or the *Solſtices*; the Sun's Equation for *Libra* varying leſs than for any other *Equinox* or *Solſtice*; becauſe it is then nearly at the *greateſt*, and a great Change of the Sun's mean Anomaly to greater (for Years back) makes but little Change in the Sun's Equation.

TO determine in what Year of the 1500*th Century, the Sun comes the nearest to* Libra, *at Noon, in the Meridian of* Greenwich, *according to the Principles of the Tables in the* Royal Aſtronomer, *or the true* ſolar *Motion obſerved.*

	Sun's M. Pl.				Sun's Apogee.				
By *R. Aſtron.* P. 8.	ſ	o	′	″	ſ	o	′	″	
1500	9	19	26	59	3	4	18	29	
P. 9. *Sept.* 13	S	12	19	32				43	
P. 17. Sun's near Eq. with cont. Sig.	6	1	46	31	3	4	19	12	
	—	1	55	37	6				
	—	5	29	50	54	2	25	40	48	[Anom. ⊙ nearly true
		6			Sub. from above An.		20	40	30	20 Yrs Mot. ⊙ Ap. by 1ſt *Oper.*
Sun's M. Mot. for Yrs. above Hund^{d}.	0	0	9	6	2	25	20	18	⊙ true An.
P. 9. neareſt Yrs. 20			9	6	+	1	55	35	⊙ Eq. correſp. [P. 17.
By 1ſt *Operation* ⊙ in ♎ at *Noon*, 1520, *Sept.* 13.					6	1	55	35	⊙ m. Pl. when truly in ♎.

	ſ	o	′	″
Hence, 1500	9	19	26	59
Mot. Yrs. 20			9	6
Sept. 13	8	12	19	32
Sun's M. Pl. at Noon	6	1	55	37
Sun's true Equation	—	1	55	35
Sun's tr. Pl. 1520	6	0	0	2

☞ By the *ſecond Operation*, Sun paſt *Libra*, 1520, *September* the 13th, at Noon, by 2″ only.

P. 9, *Royal Aſtron.* ſhews at Sight, that 53 Years Motion = 9′ 21″, or 1553, *Sept.* 13; when the Sun paſt *Libra* 22″ at Noon.

Alſo, P. 9, 49 Years Motion = 7′ 31″, or 1549, *September* 13; when the Sun was *ſhort* of *Libra* 1′ 28″, at Noon.

So in 1648, *Sept.* 12, the Sun was ſhort of *Libra* 24″ at Noon.

1681, *Sept.* 12, the Sun was ſhort of *Libra* at Noon, 1″ only.

In 1714, *September* 12, the Sun was paſt *Libra* 23″ at Noon.

And *laſtly*, in 1747, *September* 12, the Sun was paſt 45″ at Noon; all in the *Meridian* of *Greenwich*.

*** *By the foregoing Computations it may be ſeen, that there will be numberleſs ſhorter Periods than* 1440 *ſolar Years, wherein the Sun returns much nearer to the ſame Point of the Ecliptic than in that Period; becauſe the Sun's Apogee varies leſs in a leſs Period.*

☞ In 1681, *Sept.* 12, the Sun entering *Libra* within 1″ of a Degree, at Noon, at *Greenwich*, it happened in the 32d Year of the Reign of King *Charles* II. and will happen again, as *near* Noon, in ſome of the *Periods* ſeen in P. 63, foregoing; *eaſily to be determined by the above Method.*

TO

TO determine, according to the correct Principles of the Tables in the Royal Astronomer, *the nearest the Sun can come to* Libra, *at Noon, in the Century of* 1400, Julian *Style, for* Greenwich *Observatory.*

	Sun's M. Pl.	Sun's Apogee.	
	s o ′ ″	s o ′ ″	
By *R. Astron. P.* 8.			
Years since *Chr.* 1400	9 18 41 27	3 2 35 59	
P. 7. *Sept.* 14	8 13 18 41		43
P. 17. Sun's near Eq. with contrary Sign	6 2 0 8	— 3 2 36 42	find Ap. to be added.
	— 1 55 47	6	
	6 0 4 21	2 27 23 18	Sun's nearly tr. An.
	6	add to Ap. + 21 31	Sun's Ap. for 21 Yrs. determined in the 1st Operation.
Sun's M. Motion for Yrs. above Hundreds	11 29 55 39	— 3 2 58 13	
P. 9. nearest Yrs. 21	11 29 54 46	6	
By 1st Operation, Sun short of *Libra* at Noon	— 53	2 27 1 47	Sun's true Anom.
		+ 1 55 46	Sun's Eq. corresp. P. 17
	s ° ′ ″	6 1 55 46	Sun's M. Pl. when he is truly in *Libra.*
Hence, 1400	9 18 41 27		
Yrs. 21	11 29 54 46	6 1 54 34	Sun's M. Pl. at Noon,
Sept. 14	8 13 18 41		
		Error — 52	
Sun's M. Pl. at Noon	6 1 54 54	or short so much of	
Sun's true Equation	— 1 55 46	*Libra* at Noon.	
Sun's tr. Pl. 1421, *Sept.* 14, O. S. at Noon	5 29 59 8 6		
By 2d Operation, Sun short of *Libra* at Noon	— 52		

*** One of our Correspondents computed the Sun in *Libra*, 1417, *September* 14, at Noon, being 1″ 39″ short of *Libra*; 4 Julian Years being but 1″ 49″.

But, by P. 9, *Royal Astronomer*, you will find, at Sight, 54 Years Motion above Revolutions = 11° 29° 55′ 16″, and 87 Years Motion = 11° 29° 55′ 16″, both nearer to 11° 29° 59′ 38″; *Sun's mean Motion for Years above Hundreds*, in 1400, when he entered *Libra*, *exactly at Noon*, and therefore in 1454 and 1487, *September* 14, the Sun enters *Libra* very nearly at Noon, and *more nearly* than in 1421, *September* the 14th.

☞ *By the foregoing Method, the Year of the Sun's entering any Point of the Ecliptic, most nearly, at a given Time of the Day, may be readily determined.*

Radical

Radical Times of the EQUINOXES and SOLSTICES, Mean Places of the SUN and Apogee, SUN's Equation of the true to the mean Place, and Change of EQUINOXES, &c. According to the ROYAL ASTRONOMER.

The AUTUMNAL EQUINOX.

O.S.	Sun in ♎.	M. Time.				Sun's M. Pl.				Sun's Apogee.				☉Eq. tr. to m. Pl.			
		d	h	m	s	s	°	′	″	s	°	′	″		°	′	″
1760	*Sept.*	11	3	16	38	6	1	54	43	3	8	45	42	+	1	54	43
1761	*Sept.*	11	9	5	41	6	1	54	43	3	8	46	43	+	1	54	43
1762	*Sept.*	11	14	54	25	6	1	54	42	3	8	47	45	+	1	54	42
1763	*Sept.*	11	20	43	1	6	1	54	42	3	8	48	46	+	1	54	42

The WINTER SOLSTICE.

O.S.	Sun in ♑.	M. Time.															
1760	*Dec.*	9	19	14	36	9	0	17	24	3	8	45	57	+	0	17	24
1761	*Dec.*	10	1	4	4	9	0	17	26	3	8	46	58	+	0	17	26
1762	*Dec.*	10	6	53	58	9	0	17	28	3	8	48	0	+	0	17	28
1763	*Dec.*	10	12	43	26	9	0	17	30	3	8	42	1	+	0	17	30

The VERNAL EQUINOX.

O.S.	Sun in ♈.	M. Time.															
1760	*Mar.*	8	15	25	14	11	28	5	42	3	8	45	10	—	1	54	18
1761	*Mar.*	8	21	14	37	11	28	5	42	3	8	46	11	—	1	54	18
1762	*Mar.*	9	3	4	4	11	28	5	43	3	8	47	13	—	1	54	17
1763	*Mar.*	9	8	52	46	11	28	5	43	3	8	48	14	—	1	54	17

The SUMMER SOLSTICE.

O.S.	Sun in ♋.	M. Time.															
1760	*June*	9	14	0	49	2	29	42	8	3	8	45	26	—	0	17	52
1761	*June*	9	19	49	4	2	29	42	6	3	8	46	27	—	0	17	54
1762	*June*	10	1	37	20	2	29	42	4	3	8	47	29	—	0	17	56
1763	*June*	10	7	25	10	2	29	42	2	3	8	48	30	—	0	17	58

Jul. Yrs.	Change Eq^{x}. + Yrs. back. — forward.				Mot. ☉ Apo. + Yrs. forw. — back.			
	d	h	m	s	s	°	′	″
Lp. 1	0	0	44	21	0	0	4	6
2	0	1	28	42	0	0	8	12
3	0	2	13	3	0	0	12	18
4	0	2	57	24	0	0	16	24
5	0	3	44	45	0	0	20	30
6	0	4	26	5	0	0	24	36
7	0	5	10	26	0	0	28	42
8	0	5	54	47	0	0	32	48
9	0	6	39	8	0	0	36	54
10	0	7	23	29	0	0	41	0
20	0	14	46	58	0	1	22	0
30	0	22	10	27	0	2	3	0
40	1	5	33	56	0	2	44	0
50	1	12	57	25	0	3	25	0
60	1	20	29	54	0	4	6	0
70	2	3	44	23	0	4	47	0
80	2	11	7	52	0	5	28	0
90	2	18	31	27	0	6	9	0

Jul. Yrs.	Change Equins. + Yrs. back. — forward.								Mot. Sun's Apogee. + Years forward. — back.			
	d	h	m	s	D.	″	D.	″	s	°	′	″
Lp.												
100	3	1	54	51	1	40	7	74	13	0	6	50	0
200	6	3	49	42	3	20	14	48	26	0	13	40	0
300	9	5	44	33	5	0	22	22	39	0	20	30	0
400	12	7	39	25	6	40	29	96	52	0	27	20	0
500	15	9	34	16	8	20	37	70	65	1	4	10	0
600	18	11	29	7	10	0	44	44	78	1	11	0	0
700	21	13	23	58	11	40	52	18	91	1	17	50	0
800	24	15	18	49	13	20	59	92	104	1	24	40	0
900	27	17	13	40	15	0	67	66	117	2	1	30	0
1000	30	19	8	31	16	40	74	40	130	2	8	20	0
2000	61	14	17	3	33	20	149	80	260	4	16	40	0
3000	92	9	25	33	50	0	224	20	391	6	25	0	0

In 4 Julian Years, back forward

		Near Min^{s}.	m	s
±	0 30 7 59 16^{d}			
±	44^{m} 20^{s} 54th 43^{fo}		44	22

Y.	1	5^{h} 48^{m} 54^{s} 46th 19^{fo}.
	2	11 37 49 32 38
	3	17 26 44 18 57

Mot. ☉ Apog. in 4 mean Jul. Yrs. forw^{d}. + back — 4′,0999336

Mot. ☉ M. An. same with cont. Sig. } *i. e.* 4′ 5″ 59‴ 41iv. 20v.

Mot. ☉ Ap. in 1 mean fol. Yr. forw^{d}. + back — 1′,0249739

Mot. ☉ M. An. same with cont. Sig. } 1′ 1″ 29‴ 55iv. 20v.

Near Yr.			
1	5^{h}	49^{m}	
2	11	38	
3	17	27	

1 Anomalistic above a solar Yr. + 25^{m} 5^{s} 39th.

4 anom. above 4 solar

SUN's EQUATION of his true to mean Place.

Argument. SUN's true Anomaly.

☉ tr. A.	Sig. 0 +	Dif.	Sig. 1 +	Dif.	Sig. 2 +	D.	Sig. 3 +	D.	Sig. 4 +	Dif.	Sig. 5 +	Dif.	☉ tr. A.
°	′ ″	″	′ ″	″	° ′ ″	″	° ′ ″	″	′ ″	″	′ ″	″	°
0	0 0	123	58 34	105	1 40 58	58	1 55 51	8	99 42	63	57 17	106	30
1	2 3	123	60 19	104	1 41 56	58	1 55 49	6	98 39	63	55 24	106	29
2	4 6	123	62 3	102	1 42 54	54	1 55 43	6	97 36	66	53 45	106	28
3	6 9	123	63 45	102	1 43 48	54	1 55 37	9	96 30	67	51 59	108	27
4	8 12	122	65 27	102	1 44 42	51	1 55 28	11	95 23	70	50 11	108	26
5	10 14	122	67 9	98	1 45 33	50	1 55 17	12	94 13	72	48 23	110	25
6	12 16	122	68 47	99	1 46 23	49	1 55 5	17	93 1	72	46 33	110	24
7	14 18	122	70 26	96	1 47 12	44	1 54 48	18	91 49	74	44 43	111	23
8	16 20	121	72 2	95	1 47 56	43	1 54 30	16	90 35	76	42 52	112	22
9	18 21	121	73 37	94	1 48 39	41	1 54 14	23	89 19	78	41 0	113	21
10	20 22	121	75 11	93	1 49 20	38	1 53 52	24	88 1	78	39 7	112	20
11	22 23	121	76 44	90	1 49 58	39	1 53 27	25	86 43	81	37 15	114	19
12	24 24	119	78 14	91	1 50 37	36	1 53 2	28	85 22	81	35 21	114	18
13	26 23	118	79 45	88	1 51 13	31	1 52 34	29	84 1	84	33 27	115	17
14	28 22	119	81 13	87	1 51 44	33	1 52 5	34	82 37	86	31 32	116	16
15	30 21	118	82 40	84	1 52 17	29	1 51 31	32	81 11	86	29 36	115	15
16	32 19	117	84 4	83	1 52 46	26	1 50 59	35	79 45	87	27 41	117	14
17	34 16	117	85 27	82	1 53 12	26	1 50 24	38	78 18	91	25 44	117	13
18	36 13	117	86 49	82	1 53 38	22	1 49 46	39	76 47	90	23 47	117	12
19	38 10	116	88 11	77	1 54 0	22	1 49 7	45	75 17	92	21 50	120	11
20	40 6	114	89 28	77	1 54 22	17	1 48 22	43	75 45	94	19 50	118	10
21	42 1	114	90 45	75	1 54 39	16	1 47 39	44	72 11	93	17 52	119	9
22	43 55	112	91 0	72	1 54 55	15	1 46 55	49	70 38	97	15 53	119	8
23	45 47	113	93 12	73	1 55 10	12	1 46 8	49	69 1	96	13 54	118	7
24	47 40	111	94 25	71	1 55 22	10	1 45 19	53	67 25	99	11 56	119	6
25	49 31	111	95 36	68	1 55 32	8	1 44 16	53	65 46	99	9 57	119	5
26	51 22	109	96 44	66	1 55 40	6	1 43 33	56	64 7	101	7 58	119	4
27	53 11	109	97 50	65	1 55 46	4	1 42 37	56	62 26	101	5 59	119	3
28	55 0	107	98 55	61	1 55 50	1	1 41 41	58	60 45	103	4 0	120	2
29	56 47	107	99 56	62	1 55 51	0	1 40 43	61	59 2	105	2 0	120	1
30	58 34		100 58		1 55 51		1 39 42		57 17		0 0		0
☉ tr. A.	Sig. 11	Dif.	Sig. 10	Dif.	Sig. 9	D.	Sig. 8	D.	Sig. 7	Dif.	Sig. 6	Dif.	☉ tr. A.

To find the Sun's Equation answering to 4ˢ 22° 18′ 12″ *true Anomaly.*

Againſt 4ˢ 22° ſtands 70′ 38″, with Dif. — 97″, which ✕d by 18′, ≈ 18′ 12″ produce — 1765‴ = — 29

Equation + 70′ 9″, add which to the Sun's tr. Pl. + 1 10 9

Let the Sun's tr. Pl. = 6ˢ 0° 0′ 0″ of ♎.

Sun's true An. 4ˢ 22° 18′ 12″
Sun's Equation + 1 10 9

Sun's M. An. 4 23 28 21.

Sun's M. Pl. when in ♎ 6 1 10 9

See the *Royal Aſtronomer*, P. 18.

SUN's mean Motion for Days, Hours, Minutes, and Seconds.

Days	°	′	″	Days	°	′	″
1	0	59	8	5	4	55	42
2	1	58	17	6	5	54	50
3	2	57	25	7	6	53	58
4	3	56	33	8	7	53	7

H.	M. Mo. ☉ °	′	″	H.	M. Mo. ☉ °	′	″
Min. Sec.	′	″	‴ iv	Min. Sec.	′	″	‴ iv
1	0	2	28	31	1	16	23
2	0	4	56	32	1	18	51
3	0	7	24	33	1	21	19
4	0	9	51	34	1	23	47
5	0	12	19	35	1	26	14
6	0	14	47	36	1	28	42
7	0	17	15	37	1	31	10
8	0	19	43	38	1	33	38
9	0	22	11	39	1	36	6
10	0	24	38	40	1	38	34
11	0	27	6	41	1	41	1
12	0	29	34	42	1	43	29
13	0	32	2	43	1	45	57
14	0	34	30	44	1	48	25
15	0	36	58	45	1	50	53
16	0	39	26	46	1	53	21
17	0	41	53	47	1	55	48
18	0	44	21	48	1	58	16
19	0	46	49	49	2	0	44
20	0	49	17	50	2	3	12
21	0	51	45	51	2	5	40
22	0	54	13	52	2	8	8
23	0	56	40	53	2	10	36
24	0	59	8	54	2	13	3
25	1	1	36	55	2	15	31
26	1	4	4	56	2	17	59
27	1	6	32	57	2	20	27
28	1	9	0	58	2	22	55
29	1	11	27	59	2	25	23
30	1	13	55	60	2	27	50

From the mean Place of the Sun, and the mean Place of the Moon, correſpondent, deduced from their true Places, for one given Time, every Poſition relating to *Periods*, between one or both is determined: All which depend upon the Changes of their *Apogees* or *Anomalies*, neglected or rejected by the *Kennedian* or *Moſaic* Aſtronomers.

The QUANTITIES *of a mean* LUNATION, according to *different Aſtronomers*.

	d	h	m	s	th	fo	fi	ſi
1. *Cloſtratus*	29	12	0	0	0	0	0	0
2. *Harpalus*	29	12	50	54	33	0	0	0
3. *Eudoxus*	29	12	43	38	11	0	0	0
4. *Hipparchus*	29	12	44	3	15	44	39	4
5. *Calippus*	29	12	44	12	45	57	26	49
6. *Meton*	29	12	41	26	48	30	38	18
7. *Ptolemy*	29	12	44	3	20	0	0	0
8. *Alphonſus*	29	12	44	3	3	0	0	0
9. *Prutenic Tabs.*	29	12	44	3	10	38	0	0
10. *Tycho Brahe*	29	12	44	3	9	0	0	0
11. *Keil*	29	12	44	3	0	0	0	0
12. *Mayer of Gottingen*	29	12	44	2	53	23	25	0
13. Aſſum'd by *Kennedy*, no Judge	29	12	44	1	45	0	0	0
14. *Halley*	29	12	44	3	2	58	19	34 &c.
15. *Royal Aſtron.*	29	12	44	3	2	58	19	57 &c.

Amidſt theſe Differences, the different Equations reconcile the mean to the true Lunations, nearly *alike*; wherein *Kennedy* (being no Judge of the Subject) and alſo his *Hebrew* Text, are loſt.

☞ See the *Royal Aſtronomer*, Pages 120, 121, 122, *&c.* for the *Motions of the Sun and Moon, and other Bodies, according to the beſt Obſervations and Authorities.* — By which the proper and reſpective *mean Places being determined*, their reſpective *true ones* are thence had by a due Application of their *reſpective Equations*.

See Top of the Page for the Reſt.

ECLIPSES

ECLIPSES *of the* SUN *and* MOON *in* 1764. *Calculated by Mr.* Thomas Sandeſon, *of* Harborough.

Apparent Time at *London*.

I. The MOON is eclipſed, Part on the 17th and Part on the 18th Day of *March*. Beginning 17d 10h 43m Afternoon. Middle 18d 0h 4m 39s Morning. End 18d 1h 26m 19s Morning. *Duration* 2h 43m 20s. *Digits eclipſed* 8° 34′ 23″ in the Moon's *lower Limb*.

II. A great *viſible Eclipſe* of the SUN. Firſt Day of *April* in the *Morning*. Beginning 9h 17m 45s; *Middle* 10h 45m; End 0h 17m 20s Afternoon, annular, at *London*. At the Time of the Middle of this Eclipſe at *London*, the Sun will be *centrally* eclipſed in Latitude 52° 45′, Longitude 1° 11′ Weſt, near *Mountſorrell, Leiceſterſhire*. Duration, at *London*, 3 Hours.

General Appearances of the Sun's Eclipſe, April 1, 1764.

Apparent Time at *London*.	h	m	s	Latitude. °	′	″		Longitude. °	′	″		Place.
Eclipſe firſt begins as Sun riſes	7	41	22	0	14	0	S	25	20	0	W	
Sun firſt riſes *centrally* eclipſed	9	7	14	20	0	0	N	48	36	0		*Atlan. Ocean.*
Centrally eclipſed Mid. Penum. Tran.	10	25	0	45	28	0		7	22	0		*Ditto.*
Centrally in 90th Degree	10	33	30	48	23	50		4	57	40		*Liſtwoirt Bregh Norway.*
Centrally eclipſed on Meridian	11	13	22	63	50	0		11	36	0	E	
Sun's upper touched by the Moon's lower Limb on Meridian				21	10	20		—	—			*Africa.*
Sun ſets centrally eclipſed	11	43	0	76	37	0		114	28	0		*N. Ocean.*
Eclipſe wholly ends as Sun ſets Afternoon	1	9	22	56	54	0		79	57	0		*Siberia.*

The *Center* of the *Penumbra* continues *within the Earth's Diſk* 2h 36m: During which Time it paſſes over a Space of about 4507 *Britiſh* Statute Miles, with the mean Velocity of 29 Miles a Minute; which is a *little* more than 4 Times the Velocity of a *Cannon Ball*.

III. A viſible *Eclipſe* of the MOON, on the 10th Day of *September* in the Afternoon. Beginning 5h 48m 56s; *Middle* 7h 1m 16s; End 8h 13m 36s; *Duration* 2h 24m 40s; *Digits* eclipſed 4° 53′ 40″. Only *Part* of this Eclipſe will be ſeen in *England*; for the *Sun* will not be ſet here when the *Eclipſe* begins.

IV. An inviſible Eclipſe of the SUN, on the 25th of *September*, Afternoon.

General Appearances of the Sun's Eclipſe, September 25, 1764.

Apparent Time at *London*.	h	m	s	Latitude. °	′	″		Longitude. °	′	″	
Eclipſe firſt begins as Sun riſes	2	27	3	3	25	3	N	126	49	0	W
Sun firſt riſes *totally* and *centrally* eclipſed	3	34	43	12	44	0	S	143	46	0	
Totally and centrally eclipſed in 90°	4	59	7	39	16	0		94	53	0	
Totally and centrally eclipſed on Meridian	5	31	0	50	58	0		83	0	0	
Sun's upper touched by ☽'s lower Limb on *Meridian*				13	55	0					
Sun laſt ſets totally and centrally eclipſed	6	10	43	70	54	0		1	18	0	E
Eclipſe wholly ends as Sun ſets	7	18	23	54	44	0		16	53	30	W

ECLIPSES *in the* YEAR 1764.

Calculated from the Royal Aſtronomer, *by Mr.* William Chapman, *of* Foxton, Leiceſterſhire.

I. Of the MOON, *March* 17, at Night. Apparent Time at *Foxton*. Beginning, *March* 17^{d} 10^{h} 40^{m}; *Middle* 12^{h} 0^{m} 39^{s}; End 1^{h} 22^{m} 19^{s}; *Duration* 2^{h} 42^{m} 19^{s}; *Digits* eclipſed 8° 32′ 23″.

II. Of the SUN, on *April* 1, in the Morning, apparent Time at *Foxton*. Beginning *April* 1^{d} 9^{h} 14^{m} 45^{s}; *Middle* 10^{h} 42^{m}; End 12^{h} 14^{m} 40^{s}; *Duration* 2^{h} 59^{m} 55^{s}; *annular*.

The Geographical *and* General *Appearance of the* Sun's Eclipſe, April 1, 1764.

Apparent Time at *London* in the Morning. *April* 1, 1764.	h m s	Latitude. ° ′ ″	Longitude. ° ′ ″
Begin at Sun-riſe	7 41 22	0 14 10 S	25 20 0W
Sun riſes centrally eclipſed	9 7 0	20 0 0 N	48 30 0W
Centrally eclipſed in the 90th Degree	10 33 30	48 20 0 N	4 50 40W
Centrally eclipſed in the *Meridian*	11 13 9	63 50 0 N	11 36 0 E
Sun ſets centrally eclipſed	11 43 22	76 40 51 N	114 28 0 E
Eclipſe ends at Sun-ſet	1 9 10	56 54 0 N	79 57 40 E
Sun's upper touched by ☽'s lower Limb on *Meridian*		21 10 20 N	

III. Of the MOON, *September* 10 in the Morning, apparent Time, at *Boſton*, in *New England*. Beginning, *September* 10^{d} 0^{h} 54^{m} 56^{s}; *Middle* 2^{h} 23^{m} 16^{s}; End 3^{h} 19^{m} 36^{s}; *Duration* 2^{h} 24^{m} 40^{s}; *Digits* 4° 53′ 40″.

The IVth and laſt of the SUN, 25th Day of *September* in the Afternoon, *inviſible* at *London*.

The Geographical *and* General *Appearance of the* Sun's Eclipſe.

Apparent Time at *London* in the Afternoon. *September* 25, 1764.	h m s	Latitude. ° ′ ″	Longitude. ° ′ ″
Eclipſe begins at Sun-riſe	2 26 3	3 25 0 N	126 49 0W
Sun riſes totally and centrally eclipſed	3 34 40	12 40 0 S	143 40 0W
Total and *central* Eclipſe in 90th Degree	4 58 7	39 15 40	97 15 0W
Total and *central* in Meridian	5 31 0	50 59 0	83 0 0W
Sun ſets totally and centrally eclipſed	6 10 40	70 50 0	1 18 0 E
Eclipſe ends at Sun-ſet	7 18 20	54 43 0	16 52 30W
Sun's upper Limb touched by ☽*'s lower on Meridian*		13 55 0	

PUBLIC ERRORS CORRECTED.

To the PALLADIUM AUTHOR.

SIR,

In P. 364, Art. 733, *Robertſon's Navigation*, you have this PROPOSITION, with a pretended *Demonſtration*. "*On the Globe the Rhumb Lines oblique to the "Meridians are Spirals, which continually approach the Poles but never meet them.*" — The *Author*'s Demonſtration. — They never meet, becauſe the *Spiral* cannot cut ſeveral right Lines (which meet in a Point) at the ſame Angle.

The Conſequence of which is, that the 3 following eſtabliſhed and univerſal Analogies, ſupported by *Demonſtration*, as agreed to by the ſame Author, and agreeing

agreeing in their Results with one another, in a Difference of Latitude, *as far as the Poles*, must be altogether *erroneous*, or the above *Propoſition* inconſiſtent and untrue. Concerning which let the following *Examples*, according to the 3 *Analogies*, decide.

Blenchland, near *Hexham*, *July* 1, 1763.

I am, Sir, your humble Servant,
Thomas Marſhall.

When the proportional Spiral arrives in Latitude 89° 59′ 59″ 59‴ 59 iv. 51 v. ,089398 *within* 8 v. ,910602, or ,5046 *Inch* = ½ *Inch*, *of the* Pole, *then the* Horizon *may be conſidered as a* Plane, *and the* Spiral *will become of the* logarithmic *Kind, whoſe farther Length (till it falls into the Pole) may be determined by* Fluxions, *if Mr.* Robertſon *pleaſes.*

Analogy 1. As *Cof. Courſe* : *Dif. Lat. (even to the Pole)* :: *Radius* : *Diſtance, or Length of the Spiral, as far as the Pole, a finite Quantity, and conſequently will fall into the Pole in a finite Time.*

2. As Dif. Log. Tang. ½ Comp. Latitudes : Tang. 51° 38′ 9″ :: ſo Dif. Long. : to Tang. Courſe, *as far as the Pole.*

3. As merid. Dif. Lat. : Dif. Long. :: ſo Radius : Tang. Courſe, *as far as the Pole.*

Now, the Log. Tan. of 4 v. ,455311 = 0 : For Log. Tang. 1′ = — — — — *Logarithms.* 6.4637261

The Log. of Numb. 2908882 = 6.4637261

The Diff. being Log. Tang. of the 2908882d Part of 1′ = 4 v. ,455311 — Dif. 0.0000000

Now, ½ Comp. of Lat. = 89° 59′ 59″ 59‴ 59 iv. 51 v. ,08938 = 4 v. ,455311, whoſe Log. Tang. = 0. — *Thus far we find* the *Spiral* or *Rhumb Line* (continued to cut the Meridian at the ſame Angle) approaches within ,5046 Inch or ½ Inch of the *Pole*; proved by the *Analogies* before-mentioned. And how it afterwards avoids *falling into the Pole*, and then returning back on the *Supplement* Rhumbs to the Equator and contrary Pole, and then back again, on the *firſt* Rhumb, who can truly imagine?

For, *Lat.* 89° 59′ 59″ 59‴ 59 iv. &c. as above may be taken for *Lat.* 90°; whoſe ½ Complement, 4 v. ,455311, may be taken for 0 Deg. — Then,

As Dif. Log. Tang. ½ Comp. Lat. 45° and 0° = 10.0000000, taking 4 Places of Decimals with the rem. *Index* for whole Numbers, = 100000,000 — — — — — *Logarithms.* 5.0000000

(See End of *Sherwin's Math. Tables*: P. 379, of *Mercator* Salling.)

To Tang. 51° 38′ 9″ — 10.1015104

So Diff. Long. 3600″ = 21600′ — 4.3344538

Tang. Courſe = 15° 15′ 47″, or 46″,8 — 9.4359642

Alſo, by the *meridional* Parts for 90° (= thoſe for 89° 59′ 59″, &c.) = 79157, not *ſet down in any Tables.*

As *meridional* Dif. Lat. = (from Equator to the Pole) 79157 — 4.8984893

To *Dif. Long.* 3600″ = 21600′ — 4.3344538

So *Radius* — 10.0000000

To *Tang.* Courſe (as before) 15° 15′ 47″ — 9.4359645

As

	Logarithms.
As Cof. Courſe 74° 44′ 13″	Co. 0.0155954
To Dif. Lat. 90° . . 5400′	3.7323938
So Radius	10.0000000
To Diſtance 5597,438	3.7479892
Greater than Dif. Lat. by 197,438	*Sea Miles.*

By which, if theſe *univerſal Analogies* (agreeing together in their Reſults) are true, Mr. *Robertſon*'s *Propoſition* of *the Rhumbs not meeting the Pole*, muſt be an *Error*. — So that, to make out *this Propoſition*, Mr. *Robertſon* muſt ſuppoſe a ſlower and ſlower Motion of the Ship, *ad infinitum*, never to meet the Pole.

To find the meridional Parts to any Degrees of Latitude.

RULE. Log. Radius *minus* Log. Tan. of ½ Complement of Latitude (ſee *Royal Aſtronomer*, P. 288) multiplied by 7815,7 (or 7916) will give the *meridional* Parts for that Latitude of the Sphere.

To find the Meridional Parts for 90 *Degrees Latitude.*

Log. Rad. = 10.0000000
— 0.0000000 Log. Tan. 4 v. .455311 = ½ Comp. of Lat. of
89° 59′ 59″ 59‴, *&c.* taken for 90°, as 4 v.
10.0000000 *&c.* is taken for 0 Deg. the ½ Comp. of 90°.
7815,7

Product 79157 Meridional Parts required.

In P. 34, Art. 73, of *Robertſon*'s *Navigation*, is printed this palpable Error.

viz.	0	1	2	3	4	5, *&c.*	Indices or Logarithms.
To	2	6	18	54	162	486, *&c.*	Geometrical Series or Nos.
(The laſt = 2, ×	3°	3^1	3^2	3^3	3^4	3^5, *&c.*	made by him = a Multiple [of Powers.)

In which inſtanced *geometric* Series, the Author's *Indices* of any two Numbers, do not anſwer to the *Index* of the Product of thoſe Numbers, as they ſhould by the Property of Logarithms; being the *Indices* of Powers in *geometric* Progreſſion, and not (according to our Author's *Inſtance* above) the *Indices* to a *Multiple* of Powers.

For 1 + 3 = 4 the Index of 162, ſhould be the Index of 6 × 54 = 320, and ſo of the Reſt of the Series, being altogether erroneous.

An erroneous Solution, P. 484, *to Prob.* 34, *by the ſame Author.*

The Shadow runs back (or goes ſo much the contrary Way to the Sun's apparent Motion) from $9^h\ 47^m\ 36^s$ to $2^h\ 12^m\ 24^s$, the Times of the greateſt Forenoon and Afternoon Azimuths; and not 120° 31′, Mr. *Robertſon* determines the Shadow goes back only; which is juſt half what it goes *forward*, the ſame Way with the Sun. — For the Shadow goes forward (if his greateſt Azimuth and Amplitude are truly computed) from Sun-riſe to the Time of his *greateſt* Forenoon Azimuth = 120° 31′; and then goes *back* 154° 52′ to the Time of the greateſt Afternoon Azimuth; when it again goes *forward*, the ſame Way with the Sun, 120° 31′, till *Sun-ſet*, or twice 120° 31′ = 25° 2′ *forward* that Day, and 154° 52′ back. *The forward Motion is twice the Difference of the greateſt Azimuth and Amplitude*, 2 × 77° 26′ — 54° 55′ = 25° 2′; *and the backward Motion twice the greateſt Azimuth itſelf* = 2 × 77° 26′ = 154° 52′, as before.

N. B. The Shadow ſtood ſtill at the Times of the greateſt Forenoon and Afternoon Azimuths, and not at the Afternoon Azimuth only, as Mr. *Robertſon*, *deſtitutively*, makes it. — *Which Errors are, by no Means, proper Examples for* Learners, *and are therefore here duly corrected.* P.

P. 153, L. 6, for Cof. adjacent *Leg*, read Cof. adjacent *Angle*. P. 139, for *was* the Motions of the Planets, read *were* the Motions, *&c.*

P. 487. *Computation* of the *Moon's Place* from the Altitude of *two* known Stars, and the Moon's Altitude taken in the ſame *Azimuth* with one of them, (if it can be centrally taken,) without Regard to *Parallax* and *Refraction*, is untrue and uſeleſs. Determining the Time of the *Moon's Paſſage* through the Meridian, as propoſed, by her equal Altitudes, is uſeleſs, becauſe her Declination is ſo very variable.

Then proportioning the Difference of Longitude by the Difference of Time's of the Moon's Southing at *Greenwich* and at the Ship, (not to be had ſufficiently near,) can anſwer no Uſe, her Motion being ſo very unequal.

I ſhall ſend you the Reſt of the Errors in Robertſon's *Navigation, hereafter.*

REDUCTION *of* SEXAGESIMALS.

To reduce, arithmetically, Hours, Minutes, Seconds, Thirds, &c. of Time, into Degrees, Minutes, Seconds, Thirds, &c.

RULE. Multiply the Hours by 15 for Degrees.

Divide the { Minutes / Seconds / Thirds, *&c.* } by 4 { for } { Degrees / Minutes / Seconds } { to be added.

And multiply the 1, 2, and 3, Remainders of { Degrees / Minutes / Seconds } by 15 { for } { Minutes / Seconds / Thirds, *&c.* } { more to be added.

I. EXAMPLE. To reduce $23^h\ 51^m\ 19^s$ into Degrees.

15

115
23

345°

4) $51^m\ 19^s$ (12 4′
48 16

Each Rem. by 15 . . 3 3 . . . 45 45″

Anſwer 357° 49′ 45″

N. B. *Theſe Examples when ſeen are ſo evident, as to need no Attention to the Words of the Rule.*

II. EXAMPLE. To reduce $17^h\ 13^m\ 41^s$ into Degrees.

15

85
17

255°

4) $13^m\ 41^s$ (3 10′
12 40

Each Rem. by 15 . . 1 1 . . 15 15″

258° 25′ 15″

To reduce, arithmetically, Degrees, Minutes, Seconds, &c. into Hours, Minutes, Seconds, &c.

RULE. Divide the given { Degrees / Minutes / Seconds } by 15 { for Hours / Minutes / Seconds { to be added.

Multiply the Remainders of { Hours / Minutes / Seconds, &c. } by 4 { for Minutes / Seconds / Thirds, &c. { more to be added.

I. EXAMPLE. 15) To reduce 357° 49′ 45″ into Time. (23h 3m 3s

30° 45 45

57 4 0 . . . . 48 16 0th

45

Answer 23h 51m 19s

Multiply each Rem. by 4. . . . 12

II. EXAM. 15) To reduce 117° 37′ 23″ into Time. (7h 2m 1s

105 30 15s

Multiply each Rem. by 4 . . 12 7 8 . . . . . 48 28 32th

Answer 7h 50m 29s 32th

See *Royal Astronomer*, P. 167, *for other Methods.*

A PROBLEM and SOLUTION,

For the USE of NAVIGATORS, to find the LONGITUDE at SEA.

By an *Experienced* SEA OFFICER of the first RANK.

PROBLEM.

IN the Year 1750, *on* Monday, April *the* 30*th*, (having adjusted my *Time-keeper* by the Sun, at Setting, before the Observation was made, and also after it, by *Procyon*'s Altitude, having a very clear *Horizon*) *at* 7h 0m 11s, *equal Time, I observed the Altitude of the* Moon's *lower Limb to be* 60° 6′ 30″; *being then in the Latitude of* 32° 36′ 0″, N. — *The true Place of the* Moon's *North Node was then* 9s 1° 44′ 38″, *and the* Inclination *of her Orbit with the* Ecliptic, *at the same Time was* 5° 9′ 27″: *The Moon's Place in her* Orbit *is demanded, and consequently the* Longitude *the Ship was in at the Time the* Observation *was made.*

SOLUTION.

The observed *Altitude* of the Moon's *lower* Limb =	60° 6′ 30″
The Moon's Semidiameter at that Altitude +	15 46
Apparent *Altitude* of the *Moon*'s Center	60 22 16
Refraction *subtract* —	31
Apparent Altitude of the Moon cleared from *Refraction*	60 21 45
Parallax at that Altitude +	27 40
Apparent Altitude of the Moon cleared from *Parallax*	60 49 25
Altitude of the *Eye* —	3 30

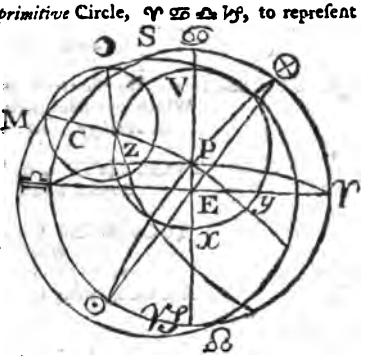
Moon's

Moon's Altitude cleared from the *Dip*	60° 45′ 55″
For the *Dilatation* of the Moon's *Body* by the Rays of Light	+ 1 30
The true *Altitude* of the Moon's Center	60 47 25
The true *Diſtance* of the Moon's Center from the *Vertex*	29 12 35

GEOMETRIC CONSTRUCTION.

To *project* the PROBLEM on the PLANE of the ECLIPTIC.

1. WITH any Radius, draw the *primitive* Circle, ♈ ♎ ♑ ♋, to repreſent the *Ecliptic*; which being divided by two Diameters ♎♋, and ♈♑, the *former* will repreſent the *ſolſtitial* Colure, and the *latter* the equinoctial Colure.



2. Set off the *Semitangent* of 28° 28′ 30″ (being the Diſtance between the *Pole* of the *Equinoctial* and *Ecliptic*) from E to P, then will P be the *North Pole*.

3. From E ſet off the *Tangent* of 66° 31′ 30″, in the *Line* E♋, produced to Q, and *draw* the Line LN *perpendicular* to E♋, and it will be a Line of Centers for all the *Hour Circles*, which are found by the Tangents, the *Sector* being opened to the *Radius* EQ: With the ſaid Tangent of 66° 31′ 30″, draw the *Prime* Meridian ♈P♎.

4. Set off the Sun's *Longitude* from ♈ to ☉ = 1ˢ 21° 2′ 6″, and through P and ☉ draw the *Meridian* ☉P⊕.

5. About P, as a Pole, deſcribe the *ſmall Circle* VZxy, at the Diſtance of 57° 24′ 0″, equal to the Co-latitude, to repreſent the Path of the *Vertex* of the Place of Obſervation.

6. The Place of the Moon's *North Node* being 9ˢ 1° 44′ 38″, ſet off its Longitude from ♑ to ☊, and its oppoſite Place from ♎ to S.

7. Draw a great Circle S☽M☊, at the Diſtance of 5° 9′ 27″ from the *Primitive*, it being the *Inclination* of the lunar *Orbit* with the Ecliptic, and will repreſent the Moon's Orbit.

8. Through P, draw the *Meridian* Circle PZCM. Thus the right *Aſcenſion* of the *Medium Cœli* being = 154° 38′ 43″, ſubtract it from 180° 0′ 0″, and there will remain the right Aſcenſion from ♎ = 25° 21′ 17″, which ſet off from the *Tangents* in the Line LN, from Q to W, and with the Diſtance WP, draw the great Circle PZCM, then where it interſects the Path of the *Vertex*, as Z, it is the *Zenith*; C the Point of the *Ecliptic* under the *Meridian*; and M the Point in the *Moon's Orbit*, culminating at that Time.

9. About the Point Z, as a Pole, deſcribe a ſmall Circle, at the true Diſtance of the Moon's Center from the *Zenith* = 29° 12′ 35″, and where this ſmall Circle interſects the *Moon's Orbit*, towards S, as it does here in the *Point* ☽, it gives the Moon's *Place* in her *Orbit*.

10 and *laſtly*. Through this laſt found *Point* ☽, and Z, the *Vertex*, draw the *vertical* Circle Z☽, and the *Conſtruction* is done.

N. B. *I have been thus far explicit to render every Thing plain to any who may be induced to practice this Method.*

The *Trigonometrical* CALCULATION is as follows,

IN the right angled Triangle ⊙♋P, there are given ⊙♋, the Sun's Longitude from ♋ = 38° 57′ 56″ and the Side ♋P = 66° 31′ 30″, the Complement of the Diftance of the Poles of the Ecliptic and Equinoctial, to find the Angle ♋P⊙, the Sun's right Afcenfion, and the Side P⊙, the Complement of the Sun's Declination.

1. *Analogy. For the Sun's Right Afcenfion.* *Logarithms.*

	As Radius	10.0000000
To Cotan. of the Sun's Long. ♋⊙	38° 57′ 56″	10.0922163
So S. polar Dift. ♋P,	66° 31′ 30″	9.9624801
To Cof. Sun's right Afcenfion from ♋, ♋P⊙,	41° 24′ 5″	10.0546964
Which fubtracted from 90° gives	48 35 55	Sun's R. A.

2. *Analogy. For the Sun's Declination.*

	As Radius	10.0000000
To Cof. Sun's Dift. fr. Poles, ♋P,	66° 31′ 30″	9.6002636
So Cof. Sun's Long. ♋⊙,	38 57 56	9.8907139
To Cof. his Dift. from Pole, P⊙,	71 57 36	9.4909775
Whofe Complement	18 2 24	Sun's Declin.
Now to the Sun's right Afcenfion, from above,		48° 35′ 55″
Add the apparent Time from Noon,	7h 4m 13s,	106 3 15
Sum, R. A. *Medium Cœli*,		154 39 10

In the right-angled △ P♋C, there are given ♋P = 66° 31′ 30″, ∠♋PC, the R. A. *Med. Cœl.* from ♋, 64° 39′ 10″, to find the Side ♋C the *Med. Cœl.* in the Ecliptic. Alfo PC the Diftance of the culminating Point from the North Pole and ∠, ♋CP, the Meridian ∠.

3. *Analogy. For Longitude of Mid-Heaven.*

	As Radius	10.0000000
To Cotan. R. A. Med. Cœl. ♋PC,	64° 39′ 10″	10.3244906
So S. Dift. two Poles ♋P,	66 31 30	9.9624801
To *Tang.* Long. M. C. ♋C,	62 41 10	10.2869707
Long. M. C. is	5s 2° 41′ 10″	

4. *Analogy. For the Declination of the culminating Point.*

	As Radius	10.0000000
To *Cotan.* Dift. Poles ♋P,	66° 31′ 30″	9.6377835
So Cof. R. A. of M. C. ♋PC,	64 39 10	9.6315481
To *Cotan.* Dift. culm. Point. from the Pole, PC,	79 28 6	9.2693316
Whofe Comp.	10 31 54	Declination.

Culminating Point and PC, 79° 28′ 6″ — PZ, 57° 24′ 2″ ZC, Dift. of M. C. fr. Vertex = 22° 4′ 6″.

5. *Analogy. For the Meridian Angle.*

	As Radius	10.0000000
To Cof. Dift. Poles ♋P,	66° 31′ 30″	9.6002636
So S. R. Af. Med. Cœl. ♋PC,	64 39 10	9.9560587
To Cof. Meridian ∠ ♋CP,	68 54 0	9.5563023

In

In the △ SMC, it is observed, that S is the Place of the descending Node = 3ˢ 1° 44′ 38″, which if taken from the Longitude of Mid-Heaven, or C. = 5ˢ 2° 41′ 10″, leaves the Arch SC, 2ˢ 0° 56′ 32″, the Distance of the descending Node from the Mid-Heaven.

In the same oblique spheric △, there is also given, ∠MSC, 5° 9′ 27″, Inclination of the Moon's Orb with the Ecliptic, and ∠MCS, 111° 6′ 0″, being the Suppl. Merid. ∠ to 180°, to find ∠CMS, the Merid. ∠, in the Moon's Orbit; and the Side MC, the Distance of the culminating Point from the Ecliptic in the Moon's Orb, the Side MS, the Distance of M. C. in the Moon's Orb, from the North Node.

Operation.

∠SCM,	111° 6′ 0″	Interjacent Side	60° 56′ 32″
∠MSC,	5 9 27		
Sum ∠s	116 15 27	Half Side	30 28 16
Half Sum	58 7 43		
Half Diff. ∠s	105 56 33		
Half that Diff.	52 58 16		

6. *Analogy.* *Logarithms.*

As S. ½ Sum ∠s	58° 7′ 43″	Co.	0.0709719
To S. ½ Dif. ∠s	52 58 16		9.9021840
So Tan. ½ interjacent Sides	30 28 16		9.7696436
To ½ Dif. Sides	28 66 48		9.7427995

7. *Analogy.*

As Cof. ½ Sum ∠s	58 7 43	Co.	0.2273542
To Cof. ½ Dif. ∠s	52 58 16		9.7797535
So Tan. ½ Side	30 28 16		9.7696436
To Tan. ½ Sum Sides	33 51 52		9.8267513
Add ½ Diff.	28 56 48		

Sum is SM, Med. Cœl. 62 48 40 in ☽ Orbit.
But subtracted, is Side MC, 4 53 4, whose Complement is the Distance of the culminating Point in the Moon's Orb, fr. N. Pole.
From PC, Dist. culm. Point in Ecliptic from N. Pole 79° 28′ 6″
Subtract ZP, the Dist. of Vertex fr. Pole 57 24 0

Gives ZC, Dist. Med. Cœl. from Vertex 22 4 6
To which add *Side* ME, found *above*, 4 55 4

Sum is ZM, Dist. culm. Point in the Moon's Orb fr. Vertex 26 59 10

8. *Analogy.* *For the Meridian Angle in the Moon's Orb.*

As S. MC,	4° 55′ 4″	Co.	1.0668871
To S. ∠MSC,	5 9 27		8.9537299
So S. Side SC,	60 56 32		9.9415762
To S. ∠SMC,	66 26 17		9.9621932

In

In the oblique spherical △ ZM ☽, are the given Side ZM 26° 59′ 10″, Side Z ☽ 29° 12′ 35″, and ∠ ZM ☽ 66° 26′ 17″, to find ∠ at ☽, and the Side M ☽.

9. *Analogy.*		*Logarithms.*
As S. Side Z ☽,	29° 12′ 35″ Co.	0 3115733
To S. ∠ ZM ☽,	66 26 17	9 9621932
So S. Side ZM,	26 59 10 . . .	9.6568401
To S. ∠ Z ☽ M,	58 27 57	9.9306066

For the Side M ☽.		Side Z ☽,	29° 12′ 35″
∠ ZM ☽,	66° 26′ 17″	Side ZM,	26 59 10
∠ Z ☽ M,	58 27 57	Dif. Sides	2 13 25
		Half	1 6 42
Sum ∠s,	124 54 14		
Dif. ∠s,	7 58 20		
Half	3 59 10		

10. *Analogy.*		
As S. ½ Dif. ∠s,	3° 59′ 10″ Co.	1.1579236
To S. ½ Sum ∠s,	62 27 7	9.9477393
So Tan. ½ Dif. Sides,	1 6 42	8.2879062
To Tan. ½ Side,	13 54 4	9.3935689
Doubled, Side M ☽,	27 48 8	

From SM,	62 48 40		
Subtract M ☽, rem. ☽S,	35 0 32	=	1ˢ 5° 0′ 32″
Add to the North *Node*'s Place			3 1 44 38
Sum, Moon's *Orbit*-Place observed			4 6 45 10
Moon's *Orbit*-Place at *Greenwich*			4 4 31 51
Difference			0 2 13 29
Moon's *diurnal* Motion			12 31 1

Therefore, As the Moon's *diurnal* Motion *(above)* 45061″
Is to 360°, in Seconds, 1296000
So is the *Difference* of the Moon's observed Place 2° 13′ 29″ 8009
To the *Difference of Longitude*, in *Seconds*, between the Place of Observation and *Greenwich Observatory*; for which Meridian the Tables in the Royal Astronomer are fitted. 23032

Which, reduced, gives 63° 58′ 22″½, the Difference of *Longitude*, *West*, from *Greenwich*. At which Time we made the Island of *Bermudas*, bearing from us SE½E, about 7 or 8 Leagues distant; which proves the *Excellency* of this Method of determining the Longitude.

ALTHOUGH the *Process* seems tedious at first Sight, it will not be found so upon Examination. — For, all the Triangles in the first Analogies being right angled, where the *Radius* is made the first Term of the *Analogies*, greatly *shortens the Work*.

Moreover, the *Requisites* in the said first *Analogies* may be found to a great *Accuracy* with little Trouble by the Tables in the Royal Astronomer, of the *Sun*'s *Right Ascension*, *Declination*, and *Meridian Angle* of the Points of the Ecliptic.

The

The other *Analogies*, being only 5, will not take up more Time than working the Proportions to find the *Azimuth*.

It may not be amiss to observe here, that whoever shall practise this Method of finding the Longitude *of the Place of Observation, if at Sea, they will save Abundance of Trouble and some Repetitions in the Solution of this Problem, if they will find the* Sun's Place *for the Meridian, which their* Journals *shall shew them to be under.* T.

NEWTON's CHRONOLOGY.

THE following CHRONOLOGICAL TABLE (we are told by Sir *Isaac Newton*) suits with the Course of *Nature*, with *Astronomy*, with *sacred History*, with *Herodotus* the Father of History, and with *itself*, without the many Repugnances complained of by *Plutarch*.

The *great Author* does not pretend (like Mr. *Kennedy*) to be exact to a Year; there possibly may be Errors (he says) of 4 or 5 Years, or *(very extraordinary)* 20 Years; but not much more. While, by the Author's Account of all Kinds of antient *historical Relations* in his preceding *Introduction* to his Chronology, (to which we refer the curious Reader) there are so many *Corruptions* introduced, that scarce any historical Relation, as to the Time of the Event's happening, can be depended on. While all Nations have been fond of magnifying the *Antiquities* of their Kingdoms to a much older *Date* than they really are. In which are found Delusions of some Hundreds of Years; *corrected by the Method of our judicious Author to ascertain the Truth*; according to the observed *Changes* in the Heavens, and concurring Circumstances with those Events.

A CHRONICLE

From the first Memory of Things in Europe *to the Conquest of* Persia *by* Alexander the Great.

THE *Canaanites* who fled from *Joshua*, retired, in great Numbers, into *Egypt*, and there conquered *Timaus*, *Thamus*, or *Thammux*, King of the lower *Egypt*, and reigned there under their Kings *Salatis*, *Bæon*, *Apachnas*, *Apophis*, *Janias*, *Assis*, &c. until the Days of *Eli* and *Samuel*. They fed on Flesh, and sacrificed Men after the Manner of the *Phœnicians*, and were called Shepherds by the *Egyptians*, who lived only on the Fruits of the Earth, and abominated *Flesh Eaters*. The *upper* Parts of *Egypt* were in those Days under many Kings, reigning at *Coptos*, *Thebes*, *This*, *Elephantis*, and other Places, which, by conquering one another, grew by Degrees into one Kingdom, over which *Misphragmuthosis* reigned in the Days of *Eli*.

CHRONOLOGICAL TABLE.

	Yrs bef. Chr. current.		Yrs bef. Chr. current.		Yrs bef. Chr. current.
MEPHRES reigned over upper *Egypt*, from *Syene* to *Heliopolis*	1125	*Amosis* drives the Shepherds out of *Avaris*	1070	*Acrisius* marries *Euridice*.	
The *Philistines* conquered *Israel*, and *Samuel* judges it	1100	*Saul* made King of *Israel*	1069	*Phœnician* Mariners voyage on the *Mediterranean* from *Zidon* to *Greece*, and carry away *Io*, Daughter of *Inachus*, coming with other *Grecian* Women to their	
Lycaon builds *Lycosura*	1080	*Samuel* dies	1060		
		David made King	1059		
		Edomites conquered and dispersed by *David*	1048		

Yrs bef. Chr. current.

their Ships to buy Merchandise 1047
David conquers the *Syrians* of *Zobah* and *Damascus*. *Deucalion* still alive 1046
Phœnicians and *Syrians* flying from *David* and *Zidon*, go under the Conduct of *Cadmus* and other Captains, and introduce Letters, Music, and Poetry, the Octaeris, Metals, Arts and Sciences 1046
Hellen, Son of *Deucalion*, flourishes 1043
Erechtheus reigns in *Attica*. *Idæi Dactyli* find out Iron in Mount *Ida* in *Crete*, and work it into Armour and Iron Tools, &c. 1035
Ammon reigns in *Egypt* 1034
Ceres, a Woman in *Italy*, seeking her Daughter, who was stolen, comes into *Attica*, and there teaches the *Greeks* to sow Corn; for which she was deified after Death 1030
Oenotrus led the first Colony of *Greeks* into *Italy*, and there taught them to build Houses. *Perseus* born 1028
Arcas received Bread Corn from *Triptolemus* 1020
Solomon reigns and marries *Ammon*'s Daughter 1019
Solomon sends out a Fleet on the *Red Sea* 1017
Temple of *Solomon* founded 1015
Ammon places *Cepheus* at *Joppa* 1014
Sesac in his Father's Reign, invades *Arabia Felix*, and sets up Pillars at the Mouth of the *Red Sea*, &c. 1010
Sesac, in his Father's Reign, invades *Africa* and *Spain*, and sets up Pillars in all his Conquests 1008
Eumolpus institutes *Ceres*'s Mysteries, being dead 1007
Minos sends out a Fleet and clears the *Greek* Seas of *Pirates*. Sends Colonies to the *Greek* Islands not before inhabited 1006
Andromeda carried away from *Joppa* by *Perseus* 1005
Sesac reigns in *Egypt*, adorns *Thebes*, dedicating it to his Father *Ammon*, by the Name of *No-Ammon*, or *Ammon-no*; that is, the People or City of *Ammon* 1002
Ægeus reigns in *Attica* 994
Pelops the Son of *Tantalus* comes into *Peloponnesus*, and marries and grows rich and potent 993
Amphion and *Zethus* kill *Lycus*, put *Laius* to Flight, reigns in *Thebes*, and walls the City about 990
Dædalus and *Talus* invent the Saw, Turning Lath, Wimble, Chip-Ax, and other Carpenters Instruments 989
Minos makes War upon the *Athenians*, for killing his Son *Androgeus*. *Æacus* flourishes 988

Yrs bef. Chr. current.

Dædalus kills *Talus* his Nephew, and flies to *Minos* 987
Sysyphus reigns in *Corinth*, and some say built that City 983
Laius recovers the Kingdom of *Thebes* 980
Rehoboam reigns. *Thoas* sent from *Crete* to *Lemnos*, reigns there in the City *Hephæstia*, and worked in Copper and Iron 979
Alcmena born 978
Sesac spoils the Temple 974
Sesac invades *India*, returning in Triumph the next Year but one. He sets up Pillars on two Mountains at the River *Ganges* 971
Theseus reigns, having conquered the *Minotaur* 968
Sesac passing the *Hellespont*, conquers *Thrace*, kills *Lycurgus*, King thereof, gives his Kingdom and one of his Singing Women to *Oeagrus* 967
Thoas made King of *Cyprus* by *Sesac*, goes thither with his Wife *Calycopis*, leaving his Daughter *Hypsipyle* in *Lemnos* 966
Sesac baffled by the *Greeks* and *Scythians*; loses many of his Women, with their Queen *Minerva*; composes the War, is received at a Feast, buries *Ariadne*, and goes back through *Asia* and *Syria*, with innumerable Captives 961

Minos

Yrs bef. Chr. current.		Yrs bef. Chr. current.
Minos making War upon *Cocalus* King of *Sicily*, is slain by him. He was eminent for his Dominion, his Laws, and his Justice. His Sepulchre, visited by *Pythagoras*, bore this Inscription, ΤΟΥ ΔΙΟϹ, the Sepulchre of *Jupiter*	964	thrown by *Asa* 946
Amphiction brings the 12 Gods of *Egypt* into *Greece*, and these are *Dii magni majorum Gentium*, to whom the Earth, Planets, and Elements are dedicated	963	The *Ethiopians*, under *Amenophis*, retire from the lower *Egypt*, and fortify *Memphis* against *Osarsiphus*. And by these Wars and the *Argonautic* Expedition, the great Empire of *Egypt* breaks in Pieces 944
Phryxus and *Helle* fly from their Stepmother *Ino*. *Helle* is drowned in the *Hellespont*, so named from her; but *Phryxus* arrived at *Colchos*.	962	*Evander* and his Mother *Carmenta* carry Letters into *Italy* 943
War between the *Lapithæ* and the People of *Thessaly* called *Centaurs*	960	*Orpheus* deifies the Son of *Semele*, by the Name of *Bacchus* 942
Oedipus, kills his Father *Laius*	958	The great Men of *Greece* ordered the Building of the Ship *Argo* for the *Euxine* and *Mediterranean* Seas, on the Distractions of *Egypt*. 940
Sesac slain by his Brother *Iapetus*, who, after Death, was deified by the Name of *Neptune*, and called *Typhon* by the *Egyptians*	956	Ship *Argo* built after the Pattern of the long Ship in which *Danaus* came into *Greece*. 939
Ethiopians invade *Egypt*, and drown *Orus* in the *Nile*, thereupon *Bubastis*, the Sister of *Orus*, kills herself, by falling from the Top of a House, and their Mother *Isis*, and *Astrea*, go mad; and thus ended the Reign of the Gods of *Egypt*.	947	*Chiron* forms the *Constellations* for the Use of the *Argonauts*, placing the solstitial and equinoctial Points in the 15th Degree of ♈, ♎, ♑, and ♋. *Meton*, in the 316th Year of *Nabonassar*, observed the Summer Solstice in the 8th Degree of *Cancer*; and therefore the Solstice had then gone back 7 Degrees; it going back 1 Degree in 72 Years, or 7 Degrees in 504 Years (which Kennedy *ignorantly disputes and confidently denies*,) which Years counted back from *Nabonassar* 316, will place the *Argonautic* Expedition about 936 bef. *Chr.*
Zerah the *Ethiopian* over-	80	

Yrs bef. Chr. current.	
Gingris, the Son of *Thoas*, slain, and deified by the Name of *Adonis*	939
Theseus, being 50 Years old, steals *Helen*, then 7 Years old. *Helena* set at Liberty by her Brothers	938
The *Argonautic* Expedition	937
Theseus set at Liberty by *Hercules*	936
The Hunting of the *Caledonian* Boar slain by *Meleager*.	934
Amenophis invades the lower *Egypt*, drives out the *Jews* and *Canaanites*	930
War of the 7 Captains against *Thebes*	928
Hercules and *Esculapius* deified	927
Theseus cast down from a Rock, and slain	925
Hyllus, invading *Peloponnesus*, slain by *Echemus*	924
Atreus dies, *Agamemnon* reigns in the Absence of *Menelaus*, who went to look after what his Father *Atreus* had left him. *Paris* steals *Helen*	919
Second War against *Thebes*	918
Thoas, King of *Cyprus* and Part of *Phanicia*, dies; is deified for making Armour for the Kings of *Egypt*, with a sumptuous Temple at *Memphis*, by the Name of *Baal Canaan*, *Vulcan*.	912
Amenophis built the *Memnonia* at *Susa*	909

P. 65, L. 7, fr. Bot. of this *Pal.* for 1ˢ 29° 55′ 16″, read 11ˢ 29° 55′ 1″.

	Yrs bef. Chr. current.
Troy taken. *Amenophis* ſtill at *Suſa*; the *Greeks* feigning he came from thence to the *Trojan* War	904
Demophoon reigns at *Athens*	903
Amenophis builds ſmall Pyramids at *Cochome*	901
Ulyſſes leaves *Calypſo* in the Iſland *Ogygie*	896
Teucer builds *Salamis* in *Cyprus*. — *Hadad*, or *Benhadad*, King of *Syria*, dies, and is deified at *Damaſcus*	895
Amenophis dies, and is ſucceeded by his Son *Ramaſſes*	887
Dido builds *Carthage*. The *Phœnicians* ſoon after ſail as far as the *Straights Mouth* and beyond. *Æneas* ſtill alive according to *Virgil*	683
Heſiod flouriſhes	870
Mœris reigns in *Egypt*	860
Häzael (Succeſſor to *Hadad*) dies and is deified	852
Æolic Migration	844
Cheops reigned in *Egypt*	838
Heraclides, after 3 Generations of 100 Years, (reckoned from their former Expedition)-return into *Peloponneſus*	825
Cephren reigns in *Egypt*, erects another Pyramid	824
Mycerinus reigns there, begins a 3d Pyramid. He ſhut up the Body of his Daughter in a hollow Ox, and cauſed her to be worſhipped daily with Odours	808
War between the *Athenians* and *Spartans*	804
Nitocris ſucceeds *Codrus*, K. of *Athenians*	794
Aſychis reigns in *Egypt*; breaks into ſeveral Kingdoms	788
Iphitus reſtores the Olympiads	776
Nechepſos and *Peloſiris* invent Aſtrology in *Egypt*	772
Semiramis begins to flouriſh	760
Sabacon invades *Egypt*	741
Pul, King of *Aſſyria*, dies, ſucceeded at *Niniveh* by *Tiglathpilaſſar*, and at *Babylon* by *Nabonaſſar*. — *Egyptians* carry their Aſtrology and Aſtronomy to *Babylon*, and founded the Æra of *Nabonaſſar* in *Egyptian* Years	747
Tiglathpilaſſar takes *Damaſcus*, and captivates the *Syrians*	740
He is ſucceeded by *Salmanaſſar*	729
He carries the 10 Tribes into Captivity	721
Sennacherib reigns over *Aſſyria*	719
Tirhakeh reigns in *Ethiopia*	717
Sennacherib put to Flight by the *Ethiopians* and *Egyptians* with great Slaughter	714
The *Medes* revolt from the *Aſſyrians*	711
Lycurgus brings the Poems of *Homer* out of *Aſia* into *Greece*	710
Lycurgus Tutor to *Carilus* the young King of *Sparta*	708
Sabacon, after reigning 50 Years, relinquiſhes *Egypt* to his Son *Sevechus*, who becomes Prieſt to *Vulcan* and neglects military Affairs.	701
Manaſſeh reigns	698
The *Corinthians* firſt begin to build Ships with 3 Orders of Oars, called *Triremes*. The *Greeks* had hitherto uſed long Veſſels of 50 Oars	697
Tirhakah reigns in *Egypt*	687
Aſſerhaddon invades *Babylon*	681
Jews conquered by *Aſſerhaddon*	673
He invades *Egypt*, committed to 12 Princes	671
The Weſtern Nations of *Syria*, *&c.* revolt from the *Aſſyrians*	668
Phraortes reigns in *Media*	658
The *Corinthians* conquer the *Corcyrians* at Sea; the oldeſt Sea Fight	657
Pſammaticus becomes King of *Egypt*	655
Firſt *Meſſenian* War begins and laſts 20 Years	652
Charops, the 1ſt decennial Archon of the *Athenians*	647
Joſiah reigns in *Judea*	640
Phraortes, King of the *Medes*, is ſlain warring againſt the *Aſſyrians*. *Aſſyages* ſucceeds him	636
Scythians invade the *Medes* and *Aſſyrians*	635

Retus

Yrs bef. Chr. current.		Yrs bef. Chr. current.		Yrs bef. Chr. current.	
Battus builds *Cyrene*, where *Irasa* had stood	633	*Amphictions* make War on the *Cirrheans*	568	*Pylæ* and *Salamis*	480
Rome built	627	*Nebuchadnezzar* invades *Egypt*.		*Artaxerxes Longimanus* reigns	464
Nabopolassar revolts from the King of *Assyria* and reigns over *Babylon*	625	*Darius* the *Mede* reigns	569	*Ezra* returns into *Judea*	457
Psammiticus dies	617	*Solon* makes Laws for the *Athenians*	562	*Herodotus* writes	444
Cyaxeres reigns over the *Medes*	611	*Periander* dies	557	*Nehemiah* returns into *Judea*	
Princes of the *Scythians* slain at a Feast by *Cyaxeres*	610	*Nabonadius* reigns at *Babylon*	555	*Peloponnesian* War begins	431
Josiah slain	609	*Pisistratus* Tyrant at *Athens*	550	*Nehemiah* drives away *Manasseh*, Brother of *Jadua*, for having married *Nicase*, Daughter of *Sanballat*	428
Creon the 1st annual Archon of the *Athenians*	607	*Solon* dies	549	*Darius Nothus* reigns	424
Nebuchadnezzar invades *Syria* and *Judea*	606	*Sardes* taken by *Cyrus*	544	*Samballat* builds a Temple in Mount *Gerizim*	422
Nabopolassar dies	604	*Babylon* taken by *Cyrus*	538	Hitherto the Priests and *Levites* were numbered and written in the *Jewish* Chronicle, before *Nehemiah*'s Death, when *Jonathan* or *Jadua* was High Priest. Here ends the sacred History of the *Jews*	412
Darius the *Mede* born	600	*Cyrus* conquers *Darius* the *Mede*, and translates the Empire to the *Persians*	536	*Artaxerxes Mnemon* reigns.	
Cyrus born at *Mandane*	599	*Cyrus* dies; *Cambyses* reigns	529	End of the *Peloponnesian* War	405
Susiana and *Elam* conquered by *Nebuchadnezzar*	596	*Darius*, Son of *Hystaspes*, reigns		*Artaxerxes Ochus* reigns	359
Cyaxeres wars with *Alyattes* King of *Lydia*	590	*Magi* slain	521	*Arogus* reigns	338
Temple of *Solomon* burnt by *Nebuchadnezzar*	588	Second Temple built at *Jerusalem*, by Command of *Darius*	520	*Darius Codomanus* reigns	336
Total Eclipse of the Sun, predicted by *Thales*, *May* the 28th, putting an End to the Battle between the *Medes* and *Lydians*	585	Second Temple finished and dedicated	515	The *Persian* Empire conquered by *Alexander the Great*	332
Phidon presides in the 49th Olympiad	584	*Hermodius* slays *Hipparchus*, Tyrant of the *Athenians*	513	*Darius Codomanus* last King of *Persia* slain	331
Phidon overthrown	580	Kings of the *Romans* expelled and Consuls elected	508		
Draco Archon of the *Athenians*	572	Battle of *Marathron*	491		
		Xerxes reigns	485		
		Passage of *Xerxes* over the *Hellespont* into *Greece*, and Battles of *Thermo-*			

*** Those who would know more of the Particulars of the historical Events happening at the several Dates before related, and of other extraordinary Events happening at the same Dates, we refer to NEWTON's *Short* CHRONICLE at the Beginning of his Quarto Book of Chronology; where the Curious may receive all desirable Satisfaction. Who may also receive ample Satisfaction as to the Truth of the *Dates* of those Events, deduced in a Manner *peculiar to the Sagacity of the great Author*, if they will consult the Body or Bulk of the Book treating

on the Chronology of the *Greeks*, next of the Empire of *Egypt*, next of the *Aſſyrian* Empire, then of the Empires of the *Babylonians* and *Medes* (deſcribing the Temple of *Solomon*,) and laſtly of the *Perſian* Empire,

To reduce the foregoing Dates *before* Chriſt *to Mr.* Kennedy's Dates *in the following Table of his Chronology of the World.*

RULE. Subtract any one of the above *Dates* before *Chriſt* from 4008, (Kennedy's *Year of the World in the 1ſt Year ſince* Chriſt,) and the Remainder will be the *Kennedian* Year of the World correſpondent. Whence it may be ſoon determined, where Mr. *Kennedy*'s Chronology deviates from *Truth*, or the *beſt Authority*, by a Compariſon of Newton's with his *Dates* following to ſome of the ſame Events. Or, ſubtract the *Kennedian* Year of the World from 4008, and the Remainder will be the Year of the World, before *Chriſt*, correſpondent.

KENNEDY's *Credulous* CHRONOLOGY *of the* WORLD,

To be compared with Newton's demonſtrative Chronology, *according to ſome certain Æra or Epoch of Time; not founded on* Belief, Opinion, *or* Superſtition, *but on the obſerved* Motion *of the* Heavens, *concurring with recorded and concomitant Circumſtances and Relations.*

Printed 1762.	*Mean ſolar Yrs. of the*		*Mean ſolar Yrs. of the*	
	Yrs.	*World.*	*Yrs.*	*World.*
ADAM lived before he begat *Seth*	130	130		
Seth	105	235		
Enoſh	90	325		
Cainan	70	395		
Mahalaleel	65	460		
Jared	162	622		
Enoch	65	687		
Methuſalah	187	874		
Lamech	182	1056		
Noah	502	1558		
Shem	100	1658		
Arphaxad	35	1693		
Sahah	30	1723		
Eber	34	1757		
Peleg	30	1787		
Reu	32	1819		
Serug	30	1849		
Nahor	29	1878		
Terah	130	2008		
Abram to his Calling out of *Ur*	74	2082		
To his Departure out of *Haran*	1	2083		
To the Birth of *Iſmael*	11	2094		
——— *Iſaac*	14	2108		
——— *Jacob*	60	2168		
——— *Joſeph*	91	2259		
To the Carrying of *Joſeph* into *Egypt*	17	2276		
To the Deſcent of *Jacob*'s 10 Sons into *Egypt*	21	2297		
To the Deſcent of *Jacob* and his Family into *Egypt*	1	2298		
To the Death of *Jacob*	17	2315		
——— *Joſeph*	54	2369		
To the Birth of *Moſes*	63	2432		
To the *Exodus*	80	2512		
To the Death of *Moſes* and the Entrance into *Canaan*	40	2552		
To the Diſtribution of the Land by Lot	7	2559		
To the Death of *Joſhua*	30	2589		
The firſt Interval after the Death of *Joſhua*, includes, 1ſt the 8 Years Oppreſſions of *Chuſhan-riſhathaim*, King of *Meſopotamia*. 2dly, The Times of *Othniel*. This contains	40	2629		
The 2d Interval includes, 1ſt, the 18 Years Oppreſſions of *Eglon* King of *Moab*. 2dly, The Times of *Ehud*. This contains	80	2709		
The 3d Interval includes, 1ſt, the 20 Years Oppreſſions of *Jabin* King of *Canaan*. 2dly, the Times of *Deborah* and *Barak*. This contains	40	2749		
The 4th Interval includes, 1ſt, the 7 Years Oppreſ-				

ſions

	Mean solar Yrs. of the World. Yrs.	
sions of the *Medianites*. 2dly, the Times of *Gideon*. This contains	40	2789
In the 5th Interval *Abimelech* reigned	3	2792
In the 6th Interval *Tola* judged *Israel*	23	2815
The 7th Interval includes, 1st, Part of the 18 Years Oppression of the *Ammonites*, 2dly, the Times of *Jair*. This contains	22	2837
The 8th Interval includes, 1st, Part of the 18 Years Oppression of the *Ammonites*, 2dly, the Times of *Jeptha*. This contains	6	2843
In the 9th Interval *Ibzan* judged *Israel*	7	2850
In the 10th Interval *Elon* judged *Israel*	10	2860
In the 11th Interval *Abdon* judged *Israel*	8	2868
The 12th Interval (which was the last before the regal Government) includes, 1st, Part of the 40 Years Oppressions of the *Philistines*. 2dly, The Judgeship of *Eli* the High Priest. 3dly, the 20 Years of *Sampson*. 4thly, Part of the Times of *Samuel*. This contains	40	2908
The 13th Interval includes, 1st, Part of the 40 Years Oppressions of the *Philistines*, and their Defeat at *Eben-Ezer*. 2dly, the latter Part of the Times of *Samuel*. 3dly, the regal Government of *Saul*. This contains, Act. V. 21.	40	2948
David reigned	40	2988
Solomon	40	3028
Rehoboam	17	3045
Abijah	3	3048
Asa	40	3088
Jehoshaphat	21	3109
Jehoram	7	3116
Ahaziah	1	3117
Athaliah	6	3123
Joash	37	3160
Amaziah	29	3189
Inter-Reign	11	3200
Uzziah	52	3252
Jotham	15	3267
Ahaz	14	3281
Hezekiah	29	3310
Manasseh	55	3365
Amon	2	3367
Josiah and *Jehoahaz*	31	3398
Jehoiakim	11	3409
Zedekiah	11	3420
PTOLEMY's *Canon*.		
The *Babylonish* Monarchy.		
To the End of *Nebuchadnazzar*'s Reign, according to the Scripture Computation	26	3446
Ilvarodamus	3	3449
Niricassolassar	4	3453
Nabonadius	17	3470
Darius	2	3472
The Persian Monarchy.		
Cyrus	7	3479
Cambyses	8	3487
Darius Hystaspes	36	3523
Xerxes	21	3544
Artaxerxes Longimanus	41	3585
Darius Nothus	19	3604
Artaxerxes Mnemon	46	3650
Artaxerxes Ochus	21	3671
Arogus	2	3673
Darius Codomannus	4	3677
The Grecian Monarchy.		
Alexander	8	3685
Phil. Aridæus	7	3692
Alexander Ægus	12	3704
Ptolemeus Lagus	20	3724
Ptolemeus Philadelphus	38	3762
Ptolemeus Euergetes I.	25	3787
Ptolemeus Philopater	17	3804
Ptolemeus Epiphanes	24	3828
Ptolemeus Philometer	35	3863
Ptolemeus Euergetes II.	29	3892
Ptolemeus Soter	36	3928
Dionius	29	3957
Cleopatra	22	3979

The

	Mean solar Yrs.	of the World. Yrs.
The Roman MONARCHY.		
Auguſtus	43	4022
Tiberius	22	4044
Caius Caligula	4	4048
Claudius	14	4062
Nero	14	4076
Gal. Oth. Vitell. Veſpaſian	10	4086
Titus	3	4089
Domitian	15	4104
Nerva	1	4105
Trajan	19	4124
Hadrian	21	4145
Antoninus Pius	22	4167
PTOLEMY's *Canon ends.*		
Antoninus Philoſophus	19	4186
Commodus	13	4199
Pertinax Julianus	1	4200
Septimus Severus	17	4217
Caracalla	6	4223
Opilius Macrinus	1	4224
Heliogabalus	4	4228
Alexander Severus	13	4241
The two *Gordians*	3	4244
Gordian Junior	6	4250
Philip the *Arabian*	5	4255
Decius	2	4257
Gallus Hoſtilius	3	4260
Æmilianus and *Gallienus*	14	4274
Claudius	2	4276
Aurelian	5	4281
Tacitus and *Florianus*	1	4282
Probus	6	4288
Marcus Aurelius Carus	2	4290
Dioclefian	20	4310
Conſtantius Chlorus	2	4312
Conſtantine the *Great*	31	4343
Conſtantius Junior	4	4347
Conſtantine alone	20	4367
Julian the Apoſtate	2	4369
Jovian	1	4370
Eaſtern EMPERORS.		
Valens	15	4385
Theodoſius the Great	16	4401
Arcadius	13	4414
Theodoſius II.	42	4456
Marcianus	7	4463
Leo I.	17	4480
Leo II.	17	4497
Anaſtaſius	27	4524
Juſtin I.	9	4533

	Mean solar Yrs.	of the World. Yrs.
Juſtinian I.	38	4571
Juſtin II.	13	4584
Tiberius II.	4	4588
Mauricius	20	4608
Phocas	8	4616
Heraclius	31	4647
Conſtantine III. IV.	1	4648
Conſtans II.	26	4674
Conſtantine V.	17	4691
Juſtinian II.	9	4700
Leontius	3	4703
Abſimerus Tiberius	7	4710
Juſtinian II. reſtored	7	4717
Phillipicus Bardanes	2	4719
Anaſtaſius II.	2	4721
Theodoſius III.	2	4723
Leo III	24	4747
Conſtantine VI.	34	4781
Leo IV.	5	4786
Conſtantine VII.	17	4803
Irene his Mother alone	5	4808
Nicephorus	9	4817
Michael I.	2	4819
Leo V.	8	4827
Michael II.	8	4835
Theophilus	13	4848
Michael III.	25	4873
Baſilius	19	4892
Leo VI.	25	4917
Alexander I.	1	4918
Conſtantine VIII.	47	4965
Romanus	4	4969
Nicephorus II.	6	4975
John Zemiſces	6	4981
Baſilius II.	50	5031
Conſtantine IX. alone	3	5034
Romanus II.	6	5040
Michael IV. and V.	8	5048
Conſtantine X.	12	5060
Theodora	2	5062
Michael VI.	1	5063
Iſaac Comnenus	2	5065
Conſtantine XI.	9	5074
Romanus Diogenes	3	5077
Michael VII.	7	5084
Alexius Comnenus	37	5121
Nicephorus	3	5124
John Comnenus	25	5149
Manuel Comnenus	37	5186
Alexius Comnenus II.	3	5189

Andronicus

	Mean solar Yrs.	of the World.
	Yrs.	
Andronicus Comnenus	2	5191
Isaac Angelus Comnenus	10	5201
Alexius III.	9	5201
EMPERORS *of* Nice.		
Theodore Lascaris	18	5228
John Ducas	33	5261
Theodorus	3	5264
John Paleologus	1	5265
Michael Paleologus	24	5289
Andronicus Paleologus I.	37	5326
Andronicus Paleologus II.	21	5347
John Paleologus V.	50	5397
Manuel II. Paleologus	33	5430
John VI. Paleologus	24	5454
Constantine Paleologus	6	5460
KINGS *and* QUEENS *of* England.		
To the End of the Reign of *Henry VI.*	81	5468
Edward IV. and *V.*	22	5490
Richard III.	2	5492
Henry VII.	24	5516
Henry VIII.	38	5554
Edward VI.	6	5560
Mary	5	5565
Elizabeth	45	5610
James I.	22	5632
Charles I.	24	5656
Charles II.	36	5692
James II.	4	5696
William III.	13	5709
Anne	12	5721
George I.	13	5734
George II. A. D. 1760	33	5767
George III. A. D. 1761	1	5768

Crede quod habes, et habes.

*** *We have published the foregoing* Kennedian Chronology *of the World for the Reader to believe more than depend on; except where he happens (by Chance) to find a Coincidence with Truth, or with* Newton's Chronology.

SCHEME *of* CHRONOLOGY.

Yr. bef. *Christ*, current.	Sum	Kennedy's Yr. of the World current.	Dif.	Year of Jul. Per. current.	Sum	Bef. *Christ*.
1	4008	4007	+	4713	4714	1
—	From	—	706	—	From	—
Yr. since *Christ*.	Dif.		Dif.		Dif.	Yr. fin. *Chr.*
1	+ — 4007	4008	+ — 706	4714	— + 4713	1

RULES *and* EXAMPLES *for the* REDUCTION *of* Kennedy's Chronology.

To determine the Year current before or since CHRIST, *answerable to* Kennedy's *credulous Year of the World, and the contrary.*

RULE I. For Years before CHRIST. — If the *Kennedian* Year of the *World* be 4007 or *less*, subtract it from 4008 the Year of the World in the 1st *current* since *Christ*, and the *Remainder* will be the Year *before Christ*.

Example 1. Required the Year before *Christ* answerable to the 40th Year of *Solomon*'s Reign, or 3028 *Kennedian* Year of the World.

4008
3028 —

Answer 980 before *Christ*.

Example

Example 2. Required the Year before *Chriſt* anſwerable to the 2d Year of *Darius*'s Reign, or 3472 *Kennedian* Year of the World.

4008
3472

Anſwer 536 before *Chriſt*.

Ex. 3. To 1 of the World.

4008
— 1 current of the World.

Anſwer 4007 before *Chriſt*.

Contrarily. Subtract the Year *before Chriſt* from 4008 for the *Kennedian* Year of the World.

RULE II. For Years ſince CHRIST. If the *Kennedian* Year of the *World* be 4008, or more, ſubtract from it 4007, the Year of the World in the 1ſt current before *Chriſt*, and the Remainder will be the Year ſince *Chriſt*.

Example 1. Required the Year ſince *Chriſt* in the 1ſt Year of the Reign of King *George* III. or 5768 of the World.

5768
4007

Anſwer 1761 ſince *Chriſt*.

Example 2. Required the Year ſince *Chriſt* in the 2d Year of *Richard* III. or 5492 of the World.

5492
4007

Anſwer 1485 ſince *Chriſt*.

Contrarily. Add the Year ſince *Chriſt* to 4007 for the *Kennedian* Year of the World.

To determine the Year of the Julian *Period anſwerable to the Year current before or ſince* Chriſt, *and the contrary.*

RULE I. For the Julian Period for Years before *Chriſt*. — *Subtract* the Year *before Chriſt* from 4714, the Year of the Jul. Per. 1 Year current ſince *Chriſt*, and the Remainder will be the Julian Period for the Year current before *Chriſt* given.

Example. Required the Julian Period to 45 Years before *Chriſt* when *Julius Cæſar* corrected the Calendar.

4714
—45 before *Chriſt*.

Anſwer 4669 Yr. of Jul. Per. cur.

Contrarily. Subtract 4714 from the Julian Period, and the Remainder will be the Year *before Chriſt*.

RULE II. For the Julian Period for Years ſince *Chriſt*. — *Add* the Years ſince *Chriſt* to 4713, the Year of the Julian Period 1 Year before *Chriſt*, and the Sum will be the Julian Period for the Year ſince *Chriſt* given.

Example. Required the Julian Period for 1764 ſince *Chriſt*.

1764
4713

Anſwer 6477 Year of the Julian Period current.

Contrarily. Subtract 4713 from the Julian Period, and the Remainder will be the Year *ſince Chriſt*.

To determine the Julian Period *answerable to the* Kennedian *Year of the World; and the contrary.*

RULE. Add 706, the Year of the Julian Period in the 1st Year current of the *Kennedian* Creation, to the preſent *Kennedian* Year of the World, and the Sum will be the Julian *Period,* required.

Example 1. Required the Julian Period to the 8th Year of the Reign of *Alexander the Great*, or 3685, the *Kennedian* Year of the World.

3685
706

Anſwer 4391 Julian Period.

Contrarily. Subtract 706 from the Year of the Julian Period for the *Kennedian* credulous Year of the World.

And ſo for the Reſt, according to the foregoing given Scheme of Chronology.

TO find when it is Biſſextile, or what Year after, by the Julian *Period.*

RULE. Subtract 1 from the Julian Period and divide the Remainder by 4, and if 0 remains it is Biſſextile, if 1, 2, 3, remain, then it is ſo many Years after.

Example. Julian Period 706
— 1

4) 705 (176

Rem. 1 or Year after Biſſextile, correſpondent to which Year is 4008 before *Chriſt*, which is alſo one Year after *Biſſextile*; anſwering to 1 Year current of the World, the 1ſt Year after Biſſextile.

To find when it is Biſſextile, *or what Year after, in the* Kennedian *Year of the World.*

RULE. Add 1 to the Year of the World, and divide the Sum by 4, and what remains, 0, 1, 2, 3, ſhews Biſſextile, or the Year after.

Example. Year of the World, 5767.

4) 5768 (1442

0 Biſſextile.

To find when it is Biſſextile, *or what Year after, for Dates before* Chriſt.

RULE. Subtract 1 from the *Date*, and divide the Remainder by 4, and taking what remains from 4, the laſt Figure 4, 1, 2, 3, will ſhew Biſſextile, or the Year after.

Example. 4008 before *Chriſt.*
— 1

4) 4007 (1001

— 3 Rem.
From 4

1 Year after Biſſextile.

☞ The *Rule* for Years ſince *Chriſt*, is, to divide the Date by 4, and what remains, 0, 1, 2, 3, ſhews Biſſextile, or the Year after.

Hence, 1 Year current since *Christ* is 1 Year since Bissextile, of 2 before *Christ*. 1 Year current of the *World* is 2 Years after Bissextile, of 2 Years current before the *Kennedian* Creation.

1 Year of the Julian Period is Bissextile. Consequently the Year before or since *Christ*, *Kennedian* Year of the World, or Year of the Julian Period, all concur to prove the same Thing, or Day of the Week; according to either of those three corresponding *Dates*.

To the PALLADIUM AUTHOR.

SIR,

Mr. Kennedy has some surprising Lengths in his late Book (intitled *Astronomical Chronology*) without a Foundation in *astronomical* Computation.

I cannot help observing, with Regard to his *Chronology of the Year of Creation*, (which he endeavours to prove was in the Year of the Julian Period 706, the Sun in *Libra* on the 4th Day of Creation Week, *or Thursday*, the 25th of *October*, at Noon, Old Style, in his first fictitious Meridian) that it is exactly the same as in *Bedford's Scripture Chronology* for the Longitude of *Babylon*, situated $2^h\ 51^m$ to the East of *Greenwich*. (See *Royal Astronomer*, P. 1.) Though his first Meridian is situated $10^h\ 24^m$ to the *West* (instead of *East*) thereof.

The *autumnal Equinox* at *Greenwich* for the Year of the Julian Period 706, or 4008 current before *Christ*, is determined (according to *Halley's Tables*) from the *Sun's Equation* to his mean Anomaly for the *exact* Time of his Entrance therein, *(from repeated Trials)* which Time will be *October* $23^d\ 21^h\ 38^m\ 34^s$, mean Time: or, by *Tables* in the *Royal Astronomer*, the Sun enters *Libra October* $23^d\ 20^h\ 34^m\ 54^s$, mean Time, from *improved Observations*; the last differing from Mr. *Kennedy's Equinox* at *Greenwich*, *October* $23^d\ 19^h\ 24^m$, by $1^d\ 13^h\ 49^m\ 6^s$, his very *great Error*; or the first differing by $1^d\ 12^h\ 45^m\ 26^s$, being a *double Proof* of his Ignorance in *astronomical* Computation, on which he vainly founds his *Chronology*.

He endeavours to prove that the Year of the *Exodus* was in his A. M. *(Anno Mundi)* 2512, J. P. (Julian Period) 3218, answerable to 1496 current before *Christ*, and the 1st Day of *Abib* to answer to *Sunday*, the 28th of *March*, and consequently the 15th of *Abib* to *Sunday* the 13th of *April*; the Day the *Israelites* set out from *Rameses*.

That the *original* Sabbath was our Sunday, revived at our Saviour's Resurrection.

Lastly, That the Temple of *Solomon* was dedicated on the same Month, Day of the Month, and Day of the Week, on which *Christ* was born; and whenever the Jews celebrate the Feast of Tabernacles, as they annually do on the 15th Day of the 7th Month, they, at the same Time, celebrate the Birth-day of the World, and Birth-day of the *Messiah* too. *With all which* Bedford's *Scripture Chronology agrees. Thus far then we may see that this Doctrine of Mr.* Kennedy's *is not a new one.*

Now, if this were really the Case, *Christmas* should never have been celebrated as a fixed but a moveable Holyday; as all the Jewish Holydays were. And it might have been expected, that, *originally*, *Christmas* should have been observed by all *Christians* over all the World, on the 15th Day of the Jewish 7th Month. But, *in Fact*, we find that it was quite otherwise. Not one single Church, not one single Sect, *catholic* or *heretic*, ever celebrated our blessed Lord's Nativity on the 25th Day of the Jewish 7th Month.

R

It might have been expected that Mr. *Kennedy* would have taken Notice of the *stupendous Suspension* of diurnal Motion in King *Hezekiah*'s Days, which so much alarmed the *Babylonians*; who were, at that Time, the most *famous Astronomers* in the World.

In *Joshua*'s Days there was a *total Cessation*, in King *Hezekiah*'s an Inversion, of diurnal Motion.* Now, the first of these Interruptions [*interrupting Mr.* Kennedy's *chronological Computation of the World's Æra, and for which Events there is an equal Scripture Authority with his other* Mosaic *Doctrines of Astronomy.*] happened between A. M. 1440, and A. M. 2880; and the Year, in which it fell out, must be *protracted* beyond our Author's *standard* Year of $365^d\ 5^h\ 49^m$ *precisely*. Consequently, if A. M. 1440 was a Year of *Commensuration*, then neither A. M. 2880, A. M. 4320, A. M. 5760, (nor any other *Multiple* of 1440) can be a Year of *Commensuration*; unless we suppose that there has happened some *preternatural* Acceleration of *diurnal* Motion, to ballance, precisely, the Retardation thereof in *Joshua*'s Days; which no Man dare presume to say. This *Difficulty* is still heightened by the *second Protraction* in King *Hezekiah*'s Days: [*rendering the* Kennedian *astronomical Chronology still more doubtful and absurd.*] For Mr. *Kennedy* does not shew what Allowance should be made for the *total Cessation* and *Inversion* of diurnal Motion in computing the Time of the *vernal* and *autumnal* Equinoxes for the Year of the Julian Period 3218 or 1496th Year *current* before *Christ*, the autumnal Equinox happening (by *Halley*'s Tables) correctly, from the Sun's Equation, answering to the *Minute* of his Entrance into *Libra*, *October* $5^d\ 20^h\ 38^m\ 25^s$ equal Time; or by the *improved Tables* in the *Royal Astronomer*, *October* $5^d\ 20^h\ 34^m\ 28^s$ equal Time, at *Greenwich*, the Sun enters *Libra*, in the 1496th Year current before *Christ*.

N. B. My Computations of the *Equinoxes* and *Solstices*, (from *Halley*'s Tables) *Pal.* 1761, P. 35, are according to the Sun's Equation for the Days at Noon, and should be at the exact Times of the Sun's entering those *Points*; which are therefore *erroneous* and require the Correction here given.

I am, Sir, your humble Servant,

Hackney, December 16, 1762. W. WILLIAMS.

* See the Prize Question for this Year.

To the BELIEVERS *in* SCIENCE.

Why will ye little Labourers *presume,*
Who, in the dark, *to* light *us strive in vain;*
As well a Taper *might the* World *illume,*
Or Superstition Science *might explain.*
To exalt *yourselves Great* NEWTON *you defame,*
Like Bats, *in Blindness bred, you love the Night,*
Who screen *beneath some* SACRED PATRON'S *Name,*
But Truth *shall trace your* Errors *into Light.*

Antihutchinsonian.

The ERRORS *of the Rev. Mr.* Kennedy's CHRONOLOGY *unfolding the* SCRIPTURES.

Mr. *Kennedy* has taken upon him, in his late *voluminous Work*, intitled *Astronomical Chronology, unfolding the Scriptures*, to set at Nought all the *Improvements* in *real* Astronomy, made by the greatest Astronomers since the first Ages; an

this by his own peculiar *Authority*, in asserting that all Astronomers are *wrong in their Calculations, and proceed upon wrong Principles.* To *prove which*, he lays his Foundation, that the SUN and MOON'S MOTIONS are always *alike*, or *uniform*, *(similar to the Motions of the Hour and Minute Hands of a Watch)* while Experience and Observation shew that they move variably in elliptic Orbits. — Who fixes the constant and invariable Length of the solar Year to the *nearest* mean Length, set down by Astronomers in *Minutes*; *viz.* $365^d\ 5^h\ 49^m$ *precisely*; on which invariable Quantity he erects his Superstructure of Calculation, in determining the Times of the *Equinoxes* and *Solstices*, or distant Periods; though far from the Time of the *true ones*; as will appear by *undoubted* Calculations founded on real and correct Observation. He fixes the *immutable* Quantity of a *Lunation* at $29^d\ 12^h\ 44^m\ 1^s\ 45^{th}$; though it is a *distant* Quantity from the correcter mean Year set down by Astronomers. Whence his *lunar* Year, of 12 such Lunations, (which he makes *immutable*) consists of $354^d\ 8^h\ 48^m\ 21^s$. On which he erects his supposed *infallible* Computations of the Times of the *New* and *Full* Moons, from certain *radical* Times observed, at certain *Dates*, — All which he computes in a Way that a School-boy can correct. While *(if there were any Use in such Determinations, from postulated Error and wrong Principles)* the same Conclusions may be performed by ten Times an easier Way, or almost by Inspection, from *Tables* of mean solar Motions. — Who going out of his Depth, into the *Ocean of astronomical Computation*, he is as much lost in *Error* and *Absurdity*, as those *speculative Navigators* by Land would be, when they come *(unexperienced)* to keep a *Ship's Reckoning at Sea*; where the necessary *Allowances* are to be made for *Lee-Way* according to the Circumstances of Wind and Weather, the Sails set, and the Sea's Motion, (when Currents sometimes are concerned.) Whence, from an Observation, a Correction of the *Latitude*, *Course*, *Distance*, *Departure*, and *Longitude*, are duly ascertained from what is called the *Dead Reckoning*. — Mr. *Kennedy*'s Astronomy being Nothing more than a *dead Reckoning* without one *Observation* to correct it.

His *Hypothesis* of the World's Beginning is thus. He takes 4 *Times* 1440 Years (or 4 Times his solar Period, *deduced as shewn farther on)* 5760 Years back from the *autumnal Equinox* 1753, observed at *Greenwich* on *September* $11^d\ 10^h\ 24^m$, O. S. and 4 Times 11 Days *forward*, in the Month-days, to 4008 current *bef. Ch. Oct.* $25^d\ 10^h\ 24^m$, O. S. (the Dom. Let. being G, and Week-day *Thursday*, at Sight, by *Pal.* 1762, P. 4 and 3) or *Oct.* 25, at Noon, $10^h\ 24^m$ to the West of *Greenwich*. At which Time he computes *(erroneously, as the Time of his Equinox)* the Moon to be at full, or 15 Days old. This may serve well enough for an *imaginary Creation* to build his future Castles in the Air upon. But as to bringing back the mean Time of the *Equinoxes* and *Solstices* to that Date before *Christ*, together with the Week-days, and then to carry them forward again, from those *fictitious Radices*, proves only the *Consequence of the Supposition*.

Mr. *Kennedy* might as well, when he was about making of Worlds, have gone back, from the *Summer Solstice* at *Greenwich*, observed 1753, *June* $9^d\ 21^h\ 15^m$, O. S. 5760 Years, and 44 Days forward, from that *Date*, to 4008 current before *Christ*, *July* $23^d\ 21^h\ 15^m$ Summer Solstice, at *Greenwich*, O. S. (according to his mean Motion) or *July* 23, at Noon, in a Meridian $21^h\ 15^m$ to the West of *Greenwich*, if the *Cardinal Points* had been *essential* to the Beginning of a World, and Noon another *Essential*: Though every true Solstice or Equinox always happens at Noon, *somewhere*, and has done so ever since the *real* Creation. And as to *Autumn*, with which Mr. *Ferguson* so wisely concurs with *Kennedy* for the Creation Season, as a proper Time, *because the Fruits were ready for Man*,* it is always *Autumn*, *Winter*, *Spring*, or *Summer*, in different Parts of our Earth. — Whence the Sun in the *Cardinal Points* can give no Advantage or Disadvantage.

* *See* Critical Review *for* May, 1763.

But

But if *July* 23, at Noon, 4008th Year current before *Chriſt*, had been the *true Summer Solſtice*, (though the true one is a Day ſhort of it) it would have ſerved as well for a *Suppoſition* when the World was made, as *October* 25 at Noon; becauſe the Dominical Letter (by the ſaid *Palladium* 1762) was G, and Week-day was *Monday*, (at *Sight*,) and needed no going back to begin the Week; as Mr. *Kennedy* is forced to do in his other *Suppoſition*, when he makes the Earth firſt move on a *Thurſday*, *October* 25, at Noon. And, moreover, from the *Radices*, or Number of Days *(incluſive)* from the *Monday Solſtice*, there would require only a Diviſion by 7 for the *Remainder* to ſhew the preſent Week-day; whereas he *puzzles* ſome of his *Readers* to add 4, and then divide by 7, for the *Remainder* to ſhew the preſent Week-Day. Or, this Author might have fetched his Creation many more *Periods*, of 1440 Years each, back out of *Antiquity*, to augment the *Wonder of his Diſcovery*; and yet have *performed Things* to as *great Effect*, and as *much to the Purpoſe*, as in his preſent Way of beginning the World.

He has racked and tortured the Length of the poor *ſydereal* Day, fixing it to $23^h\ 56^m$ preciſely; whereas every *Aſtronomer* knows it to be, correctly, the *Difference of the Sun's right Aſcenſion in Time from to the ſame Meridian, and 24 Hours*; which is continually variable; as is the Length of the true ſolar Year, which he would have (like the ſydereal Day) to be always alike. Who miſunderſtands, degrades, and miſrepreſents *Keil*, and other great Aſtronomers, *(Newton, Halley, De la Caille, Mayer, &c.)* about their Quantities. He applauds *Moſes* as the greateſt Aſtronomer that ever lived; who might, with equal Truth and Propriety have applauded *Noah* as the greateſt *Ship-builder*. Though it does not appear from Mr. *Kennedy*'s Works that he can out-reaſon his own *Cotemporaries*.

The mean SOLAR PERIOD *deduced*.

The *Kennedian* invariable mean ſolar Year (miſcalled *tropical*) } *preciſely* $\}$ $365^d\ 5^h\ 49^m$

A mean Julian Year is $365\ 6\ 0$

1440 Minutes in 24 Hours or 1 Day. The Dif. 11^m

Min. ſhort Jul. Yr. Min. in 1 Day ſhort

Say, by Proportion, If 11 require 1 what will 1440 require.

Anſwer. $\frac{1440}{11} = 130\frac{10}{11}$, or near 131 Years Julian for 1 Day to retreat.

Now, multiply this Fraction *(already in the loweſt Terms, or it muſt have been reduced thereto)* and alſo 1 Day Retreat, by 11, and there will reſult 1440 Julian Years and 11 Days *retreated*. This 1440 Years *Period* is what Mr. *Kennedy*, and his *Advocates* for *Error*, ſo much wonder at, for the profound Diſcovery thereof; while it may be deduced (as above) by every Tyro in common Arithmetic, and relates only to mean and equable Motion; which is but *Fiction* or *Hypotheſis*, and not the true Motion of the Heavens.

Mr. *Rivet* confounds the *above Period* of 1440 Julian for 1440 ſolar Years, to which it is exactly *commenſurate*; becauſe it is equal to the Number of Minutes in 24 Hours, or 1 whole Day retreated by the ſolar from the Julian Reckoning: While its Uſe relates to the Julian Reckoning only, in the 11 Days the ſolar Reckoning retreats back; or advances forward, in the 1440 Julian Years back.

Proof. In 1440 Julian Years of $365^d\ 6^h$ each are 525960 Days.

In 1440 ſolar Years of $365^d\ 5^h\ 49^m$ each are 525949

Dif. 11

Hence,

Hence, as 7 is the *Period* of Week-days, therefore 7 Times 1440 Years, or 10080 Years Julian or solar, the Day of the *Week* will return the same; another of Mr. *Kennedy*'s deep Discoveries, in which Mr. *Rivet* (in his Pamphlet, intitled *The solar Period the Basis of Chronology*, printed 1763) sets up his *Rival* in the *erroneous* Invention, without owning from whence he had it. Who had much better confine himself to his proper Province of the *Law*, where his Judgement might remain undisputed, than expose his *poor Abilities* in the Misapplication of *common arithmetic Rules* to confound the Truths in Astronomy. Which Truths he never understood, and perhaps never may. The late Secretary to the Royal Society, Mr. *Duval*, assured him he was *wrong* when he asked his Judgement concerning this same *solar Period*, when he perfisted in its Truth, (though founded on mean instead of true Motion.) And moreover, that *this was not a Time of Life for him to meddle with these Matters, unless he would be guided*. Who rejects (as *Kennedy*'s Follower) the Sun's observed *Apogee*, *Anomaly*, and *Equation of Time*, as without Existence, and useless in astronomical Computation. We therefore recommend it to him (in Order to clear his Mind from *rank Error*) to read the *General Introduction* concerning the *Nature*, *Usefulness*, and *Certainty*, of the *Mathematics*, in Mr. *Emerson*'s *Cyclomathesis*, (sold by Mr. *Nourse*,) an *easy Introduction* to the several Branches of the Mathematics, designed for *young Students*.

As to his *calculated* Times of the *autumnal* Equinoxes at *Greenwich* from 1752 to 1755, agreeing with the *observed* Times by Dr. *Bradley*, in P. 14 of his Pamphlet, wherein he thinks he has *Demonstration* on his Side for the Truth of his *solar* Period, he *cannot see* that the radical Times of the *autumnal* Equinoxes for the 706th Year of the Julian Period (or for the 4008th Year before *Christ*) were first deduced by a Subtraction of 4 of his Periods of 1440 Years each, and an Addition of 4 Times 11 Month-days, from *Bradley*'s observed Equinoxes, from 1752 to 1755, or from that for 1753, *September* 22d 10h 24m New, or the 11th of *September*, Old Style. Consequently these *Equinoxes* being again carried forward by an *Addition* of 4 solar Periods and *Subtraction* of 44 Days, with other Allowances forward, before allowed in the backward Computation, the same Times of those Equinoxes must *result*; and proves only the Consequence of the first *Supposition*: Nothing at all. (*See the true Time of the Sun in* Libra *the 706th Year of the* Julian *Period computed astronomically, further on, according to the Certainty of Observation and Sun's real Motion; confirmed by so able a* Judge as Dr. Cowper, *the present worthy Dean of* Durham.) That Mr. *Rivet* must try other Methods if he would always discover Truth. The nearer the *Equinoxes* are to those from whence the radical *ones* for 706 J. P. are deduced, the nearer will Mr. *Kennedy*'s or *Rivet*'s *erroneous* Calculation shew the Correspondency of their computed Equinoxes and Solstices with the observed Times. But the farther they go back, or forward in Dates, from 1753 since *Christ*, the more will such mean Computation deviate from the true Computation, according to the *real* Motion of the Heavens. Because for a small Number of Years from 1753, when Dr. *Bradley*'s Equinoxes and Solstices were observed, there is little Variation of the *Sun's Apogee*, and consequently of Anomaly, and therefore for about 50 or 60 Years the mean Equinoxes and Solstices will nearly agree with the true ones, there being little or no Difference in the Sun's Equation. — But from 1753 to 4008 current before *Christ*, or 706 J. P. in 5760 Years back the Sun's *Apogee* is so much changed that the Sun's *Equation* from the greatest is changed to 29′ of a Degree only, or nearly Nothing, while the mean Motion is always the same.

Mr. *Rivet*, in his Postcript, has at last admitted of a *Precession* of the *Equinox*, of 50″ annually, which is acknowledging the Sun's *Apogee* forward, which yet he

he denies in his Method of computing the Times of the Equinoxes, who allows for no Equation of the Sun, the most essential Part of that Computation. Who has the *Royal Astronomer* in his Hands for no Use, which he purchased of the Author. — Now, the Difference of the *Sun's mean Place*, and of the *Sun's Apogee*, taken out of the Tables in the *Royal Astronomer*, founded on the *correctest Observations* at Home or abroad, will always shew him *their Distance*, or Quantity of *mean Anomaly*; by which, (from *Tab.* P. 11.) he may find the *Sun's Equation* to be subtracted from, or added to, the Sun's mean for his correct true Place, and when he truly enters any Sign will follow. — As by P. 18, *Royal Astronomer*, he is shewn a direct Method *(never before published by any Author)* to find when the *Sun enters into any Point of the Ecliptic, according to his true, not mean, Motion*, with the *least* Trouble. The Sun's Apogee being first had, which is easy, to any Month day, his *true Anomaly* is had by subtracting it from the Sun's *true Place*, into which when he enters, the Times required, and thence his Equation, (by *Table* 17.) whence by adding or subtracting the same, to or from, the *Sun's true Place* to be entered, will give his *mean Place* at his true Entrance. — From whence deducting the *mean Place* at the Year's Beginning, there will remain a Quantity from which the *next less* must be deducted for the Month-day; and from that Remainder the *next less* for Hours; and from that the *next less* for the Minutes, and *next less* for the Seconds; which is as near as the Time can be had. — For Thirds of Time are of no Use, and are but speculative.

Mr. *Rivet*, finding 20^{m} 17^{s} 28th, &c. of Time equal to 50″ of a Degree, the *Precession* in one Year, or 20 Deg. and 20^{d} 6^{h} 59^{m} 23^{s} 20th correspondent to the *Precession* in 1440 Years, according to 360 Deg. Precession, answerable to 365^{d} 5^{h} 49^{m} in 25920 Years, can answer no End; but is only farther *bewildering* himself in *Error* and *Confusion*, unless he had attended to the *Motion* and *Place* of the Sun's *Apogee*, and his mean Place, respecting these Quantities, with which he has done Nothing, or shewn no Use of, *except to look at them*, in the *pretty little Table* where he has uselessly placed them; without so much as seeming to know their Use, or what he intends by them. Whose printed Computations, by decimal and common Arithmetic, of *Interest*, *Expences*, and other Matters, (he refrains to subscribe his Name to) for *new*, have been done many Times over in many Books (even in the *Gentleman's Diary*) in a much better Method. *We refer him to* Emerson's Cyclomathesis *aforementioned for his Improvement.* — But with Regard to *Kennedy* —

A mean *Kennedian Lunation*, taken as an invariable true one 29^{d} 12^{h} 44^{m} 1^{s} 45th
12 of which, his invariable *lunar* Year 354 8 48 21 0

A mean lunar Period deduced, or the least Time in which a New or Full Moon returns at the same Time it before happened, according to mean Motion.

From	365^{d}	5^{h}	49^{m}	0^{s}
Take	354	8	48	21
Complement to a solar Year	10	21	0	39

The Seconds in 24 Hours are 86400. In the above Time 939639 Seconds.

Sec. short Sol. Yr. Sec. in 1 Day
By *Proportion* say, If 939639 require 1 what will 86400 require?

Answer. $\frac{86400}{939639}$ Years; reduced to the *lowest Terms*, dividing the above

Fraction

Fraction by 3, in *Numerator* and *Denominator*, there results $\frac{28800}{313213}$ Years for 1 Day to retreat.

Now, multiply this *Fraction* by 313213, and the 1 Day by the ſame, the Reſult will be 28800 *ſolar* Years and 313213 Days gone back in the *Lunations*.

Otherwiſe.

From	365d	6h	0m	0s
Take	354	8	48	21
	10	21	11	30

Seconds in 24 Hours are 86400. In the above Time 940299 Seconds.

Sec. ſhort Jul. Yr. Sec. in 1 Day.

By Proportion ſay, If 940299 require 1 what will 86400 require?

Anſwer. $\frac{86400}{940299}$ Yr. or, reduced to *loweſt* Terms, (dividing the Numerator and Denominator by 3) $\frac{28800}{313433}$ Yr. for 1 Day to retreat; multiplying which Fraction and 1 Day retreated by 313433, and there will reſult 28800 Julian Years and 313433 Days, retreated by the *Kennedian* Lunations, correſpondent to 28800 lunar Years of 12 Lunations each; making 345600 Lunations to the ſaid Period.

This *lunar Period* of 28800 Julian Years for 313433 Days Retreat of Lunations, correſpondent to 28800 mean ſolar Years, correſpondent to 28800 *lunar* Years, is what Mr. *Kennedy*, Mr. *Rivet*, and his Followers, had no Notion of, though ſo eaſily deduced; being but 20 *Times* their *ſolar Period*.

	Jul. Yrs.	Days.
Proof. 28800 of 365d 6h each		10519200
28800 lunar Years of 354d 8h 48m 21s each		10205767
	Diff.	313433

	M. ſol. Yrs.	
28800 of 365d 5h 49m each		10518980
28800 lunar Years of 365d 8h 48m 21s each		10205767
	Diff.	313213

But Mr. *Kennedy* aſſures us, (P. 196 of his Book) that no *New* and *Full Moon* can return to the Time that either before happened in *leſs* than 7948800 *ſynodical* Revolutions of the Moon. But the 23d Part of which Number makes only 345600 *ſynodical* Revolutions equal to 28800 lunar Years, correſpondent to 313433 Days retreated in 28800 Julian Years, our *lunar Period*, proved true (in Conſequence of Suppoſition) as above. — Mr. *Kennedy* aſſures us, that a *lunar* Period is 23 Times greater than it is proved to be above, *viz.* 7948800 Lunations (erroneouſly deduced by what he calls *Triacontaeterids*, of 30 lunar Years each) inſtead of 345600.

A GENERAL RULE for *deducing any mean Period.*

Divide the Minutes or Seconds in a Day, by the Minutes or Seconds retreated or advanced in 1 *Year* (ſolar, lunar, *or* Julian) *reſpectively. Reduce the* Fraction *to the*

the lowest Terms, *then* multiply *it by a Number equal to the Denominator, and the Result will be the Years of the Numerator for the Period. In which Period as many Days will be retreated or advanced as are equal to the Denominator.*

Now, as 7 is the Period of the Week-day, therefore 7 Times the Period of 28800 Years, (Julian, solar, or lunar) or 201600 Years, in which Period the *New Moon* or *Full Moon*, (according to mean Motion) return at the same Hour and Minute, on the same Week-day on which it first happened; which Period, being composed of 7 by 20 by 1440 Years, the *Equinoxes* and *Solstices* will also return in that *Period* (of Julian, solar, or lunar Years) on the same Week-day.

Again, as 1461 is the *Period* of Month-days returning the same in 4 Years, 1461 Times 201600, or 294537600 Years (Julian, solar, or lunar) the *New* or *Full* Moon, *Equinoxes* or *Solstices*, return on the same *Day of the Month* and *Week-day*, at the same *Hour* and *Minute* they first happened, according to mean (not the true) Motion, and not before.

Mr. *Kennedy* asserts, in Contradiction to common Sense and Experience, that the *Equation of Time* (or of a natural Day) is "*a Distinction without a Difference*"; who makes the solar Days to be *exactly* equal. Who *(like the Methodists)* would draw Others into his *Persuasion*. But if the *established Church Doctrines* were as easily set aside, as he thinks, by his Endeavours, he has set aside the *established Astronomy*, for chimerical Inconsistencies, (like the *Cartesian* Philosophy) all *prelatical Order* would quickly be abolished by Men of heretic *Principles*, Confusion would take Place of *Religion*, and Christianity be banished from amongst us, by *Enthusiasts* setting up *new Lights*.

TABLE *of the Sun's* entering *the* Equinoxes *and* Solstices, *according to Dr.* Bradley's *Observations, at* Greenwich *Observatory.*

Since *Chr.*	Vernal Equinox. *March.*			Summer Solstice. *June.*			Autum. Equin. *September.*			Winter Solst. *December.*		
	d	h	m	d	h	m	d	h	m	d	h	m
B. 1752	19	16	40	20	15	14	22	4	32	20	20	32
1753	19	22	33	20	21	15	22	10	24	21	2	21
1754	20	4	26	21	3	8	22	16	14	21	8	15
1755	20	10	16	21	8	48	22	22	4			

According to Tycho, *at* Uraniburgh.

	A. D.	d	h	m	d	h	m	d	h	m	d	h	m
B.	1584	10	9	30	11	14	13	13	4	0	11	14	44
1	1585	10	15	19	11	20	1	13	9	49	11	20	33
2	1586	10	21	8	12	1	49	13	15	38	12	2	22
3	1587	11	2	56	12	7	37	13	21	26	12	8	11

From the above *Equinoxes* and *Solstices* observed by Dr. *Bradley*, Mr. *Kennedy* (supposing mean and equable for true and variable Motion) reckons back to the radical *Equinoxes* and *Solstices*, at the Time of his *hypothetical* Creation.

JULIAN STATIONS *of the* **EQUINOXES** *and* **SOLSTICES** *in the first four Years of the* Kennedian *World's Age, as follows.*

	Before	Vernal Equin. *April.*			Summer Solst. *July.*			Autum. Equin. *October.*			Winter Solst. *January.*		
		d	h	m	d	h	m	d	h	m	d	h	m
Biss. o	2												
1	1	0	0	0	0	0	0	25	0	0	22	15	57
2	A.M. 1	21	17	58	23	16	40	25	6	0	22	21	57
3	2	21	23	58	23	22	40	25	12	0	23	3	57
Biss. o	3	21	5	58	23	4	40	24	18	0	22	9	57
1	4	21	11	58	23	10	40	0	0	0	0	0	0

By the *above Table* we may see, that Mr. *Kennedy* has so contrived the Matter, that *his Creation* begins at the Beginning of the 1st Year *before Creation*; which is a notable *Instance* of his *Sagacity* above what is found in other Men. And it may be asked why he adds 6 Hours for the following Years *Equinoxes* and *Solstices*, instead of $5^h\ 49^m$, according to his own Principles of *mean Motion*, except it be to *enlarge* the Operation of a *forward* Reckoning from these back computed *Radices*. — But his *Evening* 6, *Midnight* 12, the *Morning* 18, and *Noon* 0, make the *first Day*; who should therefore have thrown off only $4^h\ 24^m$ from the Time of the Equinox at *Greenwich*, instead of $10^h\ 24^m$, to leave *October* $25^d\ 6^h$ for Creation to begin at Even, the Beginning of the 1st Day, *before there was a Day*, or the Earth moved, according to what is written.

He gives us (P. 177) the *Distance* of Time between the *Equinoxes* and *Solstices constantly* the same, as follows; on which Error he partly founds his Computation of *Equinoxes* and *Solstices*.

1. From the *Winter Solstice* to the Vernal Equinox	89	2	1
2. From the *vernal* Equinox to the Summer Solstice	92	22	42
3. From the *Summer* Solstice to the autumnal Equinox	93	13	9
4. From the *autumnal* Equinox to the Winter Solstice	89	15	57
	365	5	49

N. B. The Quarters of the Year are *various* according to Computation from true Motion, and to the different Situations of the Sun's Apogee, P. 136. — He commends Bishop *Usher* and follows his *chronological* Steps; but with greater Improvement however (he *pretends*) in searching for an *Æra* of Creation. — Who sets down a Multitude of Events in *sacred* History, as relative to his Work, without any *Dates*; though he tells us in another Place of his *inastronomical Chronology*, that *without Chronology there is no Certainty in History, and without Astronomy there is no Certainty in Chronology, which is one of his true Propositions*, whoever helped him to it, or it happened that he found it out.

P. iii. *Introductory Discourse*, he tells us, there are 6 disagreeing *Computations* of the *Hebrew* Text; 1st, of the *Hebrew Text*; 2dly, of the *Samaritan* Pentateuch; 3dly, of the *Vatican* Copy; 4thly, of the *Alexandrian* Copy of the *Septuagint*; 5thly and 6thly, of *Josephus*, who gives two Computations which cannot be reconciled together by 400 Years. — And what Difference in sacred as well as in profane Chronology is there not, Mr. *Kennedy*, nor wiser Men, can determine?

Quere. How would Mr. *Kennedy* approve of Others endeavouring to unsettle the established *Church Doctrines* of Belief, as he endeavours to unsettle the established *Doctrines* of *Astronomy*, and to abolish astronomical Improvement, both designed

designed for public Utility? — Who would reduce all demonstrative Science to Belief; as if he expected to be made a B----p, as the late Dr. *Berkeley* was, for his Sophisms, Jargon, and Contradictions to the Evidence of Sense. Who appears to be possessed of a like Ambition with that Prelate, (or *Erostratus*, who burnt the Temple of *Diana*) for demolishing the *Newtonian Principia*, by his disputing the *Facts* and *Demonstrations* therein contained, which neither of those Pretenders ever understood.

P. 220. He blunders and denies the *lunar Anticipation* in the Julian Account: Who reproaches *Keil*, and says the *Lunations* go forward instead of back in the *solar* Account; and so would make all Astronomers *Blunderers*, for asserting *lunar* Anticipation; though they never asserted it in any other than the Julian Account, where it is proved. For we do not reckon by the solar Account, from whence he raises this Objection. — He says a *lunar Anticipation* has no Existence but in *unastronomical Computation*.

He recites, God said, *baju lemoadim*, let the *Sun* and *Moon* be appointed, among other original Designations for the Regulation of *Festival* Days; the 15th Day of the first Month of the *sacred* and *ecclesiastical* lunar Year, was ordered to be coincident with the original *Cardinal* Point of the Year. And what is all this to true astronomical Computation?

P. 219. It appears (says he) from my [*chimerical*] *Calculations*, that the *Conclusions* in *astronomical Chronology* are as demonstrably certain as the *Conclusions in Geometry*. — That the *postulated* Quantity of a mean Lunation, $29^d\ 12^h\ 44^m\ 1^s\ 45^{th}$, is true to a *mathematical Precision*; and that the *least Particle of Time* can neither be *added to nor subtracted from it* without disconcerting the astronomical Intersection [*viz. of his Head*] as determined by tabular radical Numbers!

A CORRECT COMPUTATION of the *autumnal Equinox*, at the *Kennedian* Creation, in the 706th Year current of the Julian Period, or 4008th Year current bef. *Chr.* According to the improved solar Tables in the *Royal Astr.*

By *Royal Astron.* P. 3. since *Christ*, 1693	Sun's M. Place. $9^s\ 20°\ 40'\ 5''$	Sun's M. Apog. $3^s\ 7°\ 36'\ 18''$
P. 8. Mot. 5000 Yrs.	1 7 56 40	2 25 25 0
700	0 5 18 44	0 11 57 30
Mot. 5700 Yrs.	1 13 15 24	3 7 22 30 deduct
Bef. *Chr.* 4008 —	8 7 24 41	0 0 13 48
☉ m. P. when truly in ♎	6 0 0 29	50 *October* 23.
Rem.	9 22 35 48	0 0 14 38
Oct. 23 —	9 21 45 5	6 0 0 0 Sun's true Place.
Rem.	50 43	5 29 45 22 Sun's true Anom.
Hours 20	49 17	+ 29 Sun's Eq. *R. Astr.* P. 17.
	1 26	6 0 0 29 ☉ M. Pl. when truly in ♎
Min. 34	1 23	47
Sec. 54	2	13

☞ *This Computation is submitted to the judicious Inspection and Examination of Mr.* Kennedy's *best Friends, and of his principal Advocate, Mr.* Rivet.

Royal Astron. 4008 bef. *Chr.* ☉ in ♎ *October* $23^d\ 20^h\ 34^m\ 54^s$

At *Greenwich*, ☉ in ♎, by *Kennedy*, 25 10 24 0

His *Error* 1 13 49 6

A CORRECT COMPUTATION *of the mean Full Moon next the* autumnal Equinox *at the* Kennedian Creation.

By *Tables* in the *Royal Aſtronomer*, near the End.

1793, *Jan.*	0d	19h	1m	11s	Mean New Moon, O. S.
Motion for *October*	22	7	20	30	
1793, *Oct.*	23	2	21	41	Mean New Moon.
Mot. for ½ Lunation	14	18	22	2	
1793, *Nov.*	6	20	43	43	Mean Full Moon.
	37				his Full Moon-day.
Mot. for Yrs. 5800	— 15	12	38	10	
Before *Chriſt* 4008 *Oct.*	22	8	5	33	Mean Full Moon, O. S.
According to *Kennedy*, *Oct.*	24				his Full Moon-day.
Kennedy's Error, Diff.	1	15	54	27	

A COMPUTATION *of the mean Full Moon next the* autumnal Equinox *at the* Kennedian Creation.

By *Halley*'s *Tables, Greenwich.*

P. Ee, 3. 1793, *Jan.*	0d	19h	3m	9s	Mean New Moon, O. S.
Mot. for *Oct.*	22	7	20	30	
1793, *Oct.*	23	2	23	39	Mean New Moon.
Mot. for ½ Lunation	14	18	22	2	
1793, *Nov.*	6	20	45	41	Mean Full Moon.
	37				
Mot. for Yrs. 5800	— 15	12	38	10	
Before *Chriſt* 4008 *Oct.*	22	8	7	31	Mean Full Moon, O. S.
According to *Kennedy*, *Oct.*	24	0	0	0	his Full Moon-day.
Kennedy's Error, Diff.	1	15	52	29.	

Being a *double* Proof againſt *Kennedy*, that the mean Full Moon happened on the 22d and not on the 24th of *October*, 4008 before *Chriſt*.

Same Tables.

1753, *Jan.*	22d	16h	22m	2s	Mean New Moon, O. S.
Mot. for *September*	22	18	36	27	
October	15	10	58	29	Mean New Moon.
Add	14	18	22	2	½ Lunation.
1753, *Oct.*	30	5	20	31	Mean Full Moon.

Though Mr. *Kennedy* computes by an equable [or erroneous] inſtead of a true Motion, he nevertheleſs tells us, (P. 223) that the more *ſcrupulouſly* his *Calculations* are ſcrutinized, the more they will be admired, and the more will thoſe who examine them, he ſaith, be convinced of the Perfection of his *original Principles*;

Principles; and that the CREATOR in the Beginning *(he imagines)* diſpoſed the *two Luminaries* under ſuch *Circumſtances* as ſhould become the ſure *Baſis* of his future *aſtronomical* [i. e. chimerical] *Calculus*, throughout all Ages of the World!

At the End of his *voluminous Work* he gives us a *ſolar* and *lunar* Calendar of an *imaginary* or *chaotic* Year; *viz.* the Year before Creation, with correſpondent Week-days. — To which is annexed, an aſtronomical Reduction *(as he calls it)* to the Month-days of the Julian Year: Together with *ſcriptural* Calendars i. ii. iii. iv. and an *imaginary Calendar* of the *Exodus*.

Who taking a Retroſpect of his immenſe Labours, like the Angel *Gabriel* taking a Survey of the *new Creation*, and unfolding the Scriptures to our firſt Parent *Adam*, (as deſcribed by *Milton*,) he breaks out into the following *enthuſiaſtic* Rapture! [*amended a little between Crotchets.*]

"Thus have I endeavoured to free Religion and Hiſtory, from the Darkneſs "and Difficulties of a diſputed and uncertain Chronology, from Difficulties "which have appeared inſuperable, and Darkneſs [*thick as the Fog of Ignorance*] "which no Luminary of Learning has hitherto been able to diſſipate. I [*even "I*] have eſtabliſhed the Truth of the *Moſaical* Account, by Evidence which "no *Tranſcription* can corrupt, no Negligence can loſe, and no Intereſt can per-"vert. — I have ſhewn, that the Univerſe bears Witneſs to the Inſpiration of "its *Hiſtorian*, by the Revolution of its Orbs, and the Succeſſion of its Sea-"ſons. That the Stars [*brave Stars!*] in their Courſes fight againſt Incre-"dulity, [*in Defence of the true Believers,*] and that the *Works* of God give "hourly Confirmation to the *Law*, the *Prophets*, and the *Goſpel*; of which one "Day telleth another, and one Night certifieth another. And that the Validity "of the *ſacred* Writings never can be denied [*though they may be degraded by "ignorant Commentators*] while the Moon ſhall increaſe and wane, and the Sun "ſhall know his going down, [*even as my Lord Mayor knoweth the Time of his "going out of Town, who then ſitteth to the Inhabitants of the great City.*]

"ΔΟΞΑ ΜΟΝΩ ΤΩ ΘΕΩ!

"SOLI DEO GLORIA!"

As if immortal Glory had been actually acquired; though, like the *French*, he ſings *Te Deum* before the Victory!

To the Rev. Mr. John Kennedy, *Rector of* Bradley *in* Derbyſhire, *on his late* WORK, *intitled* Aſtronomical Chronology unfolding the Scriptures.

GO *Kennedy* — the ſaving *Faith* reveal —
Where Knowledge ſhrouds, let *Myſtery* prevail;
Go fright the *Sinner* from his wicked Ways;
And make *Believers* ſtartle in Amaze!
In *Vollies* let your *Pulpit-Thunder* ſound;
But, if your *Voice* is low — let *Thumps* rebound.
By awful *Rhetoric* make Men as they *ſhould*,
And lead whole Nations to be *juſt* and *good*.
Hold faſt your *Faith* — as *Moſes* leads the Way;
Deal not in *Science* — there you lead *aſtray*.
There, in GOD's Works, *Truth* makes a ſure Retreat;
The SUN *and* MOON *are not within your Beat.*

A short ACCOUNT *of a late prodigious* PRODUCTION.

THIS new-born *Prodigy* (containing 728 Pages in *Quarto*, besides many *incoherent, introductory, subsequent*, and *inconsistent tabular* Pages unnumbered, penned by co-operating and divinely inspired auxiliary *Geniuses*, but the Times *when* remaining as yet a Secret, as unknown as the Æra of the *World's Creation* on which it treats; and as likely to remain as long a *Secret* as the Æra of the *World's Dissolution*) sprung like a young *Phœnix*, from the Ashes of the *old Edition*, much enlarged in Dimensions and Magnitude; aided in its Birth with about 300 *l.* Expence to the *Gossips, Nurse*, and *Midwife*. But (*unhappily for its fond Parent*) being lately seized with an inherent and hereditary Disorder (*Ignorance* and *Error*,) it is apprehended it will be cut short in its Thread of Duration, so as to come to an untimely End; now being given over by Mr. *Ferguson*, who attended it as *Physician*.

As far as Goose *could judge — one reason'd right;*
But t'Other — he mistook the Matter quite.

BAMFIELD FOR EVER!

SECOND *Kennedy* come upon the *Stage* before the first has made his *Exit!*

Astronomy opened, at *Honiton*, near *Exeter*, in *Devon*, the late Resident Seat of *Bamfyde*, King of the Beggars. Which *prodigious Astronomy* (as its *distinguished* Author takes upon him to explain the *solar System* on *more rational Principles than the* Newtonian, tout de Nouveau, *on new and true Grounds*) we therefore take upon us to recommend as very useful for all *Fortune Tellers* and *Gipsies*. So when a *Genius* pedantic suddenly springs up, like a *Mushroom* of a Night's Growth, a *Bricklayer's Labourer* may rival a *Wren* or a *Vanburgh* in *Architecture*.

VI. QUESTION, Pal. 1762, *answered by Mr.* Thomas Cowper, *of* Wellingborough.

STARS setting together have the same *oblique Ascensions*; consequently if they have *contrary Declinations*, the Difference of their *Right Ascensions* will be equal to the *Sum* of their *ascensional* Difference.

Put, $a =$ Tan. 73° 59′ 38″, Comp. of *Aldebaran*'s Declination.
$b =$ Tan. 73° 37′ 46″, Comp. of *Sirius*'s Declination.
$s =$ Sine, and $c =$ Cos. 16° 33′ $\frac{1}{2} =$ Sum of their ascensional Diff. ($= \frac{1}{2}$ Dif. of their R. Ascensions) and $x =$ Sine, $y =$ Cos. of $\frac{1}{2}$ Diff. of their *ascensional* Diff. — Then will $sy - cx = \frac{1}{2}$ Diff. of their asc. Diff. and $sy + cx =$ that of *Syrius*'s.

Per Spherics. $\left\{\begin{array}{l} 1 : a :: sy - cx : asy - acx = \text{Tan.} \\ 1 : b :: sy + cx : bsy + bcx = \text{Tan.} \end{array}\right\}$ of the *Place*'s Latitude.

$\therefore asy - bsy = acx + bcx$, *i. e.* $\frac{x}{y} = \frac{as - bs}{ac + bc} =$,003531, the natural Tan. 12′ 9″ $= \frac{1}{2}$ Diff. of their *ascensional* Diff. Hence the *Latitude* is 44° 28′ 12″, required.

Hence, the following *general Analogy*.

As the Sum of the Tangents of the Stars Co-Declinations
Is to the Difference of the Tangents of their Co-Declinations
So is the Tangent of ½ the Sum of their aſcenſional Difference
To the Tangent of ½ the Difference of their aſcenſional Difference.

N. B. This *Solution* confirms the Truth of that by Mr. *Thomas Sanderſon of Harborough*, (P. 56 and 57 *this Pall.*) and therefore there muſt be a *Miſtake* in Lat. 54° 56′ by *Newtonienſis*, occaſioned by ſome *Overſight* in the Operation, in deducing that Latitude. Mr. *Harris*, the Propoſer's, Anſwer, we are told, alſo agrees with Mr. *Cowper*'s Anſwer above.

Whoever anſwers the following Quere before March *the 1ſt next, has a Chance by Lot for* 4, 3, *and* 2, Palladiums enlarged.

Chronological and aſtronomical PRIZE-QUERE. *By* Antikennedius.

REQUIRED the Day of the *Moon*'s Age, and *Julian*, *Gregorian*, and *Turkiſh* Day of the *Month*, the *Julian* Date of the Year, and Week day, when *Mahomet* fled from *Mecca* to *Medina*. Alſo the *Julian* Dates of the Year, Month-days, and Week-days, back from 1764, when the *autumnal Equinox* and a *Full Moon*, the *vernal Equinox* and a *New Moon*, reſpectively, coincided the *neareſt*; according to the *Tables* in the *Royal Aſtronomers*.

BOOKS *juſt publiſhed by Mr.* EMERSON.

I. A *Treatiſe* of *Arithmetic*. Containing all the *practical* Parts thereof, both in whole Numbers, Vulgar Fractions, and Decimals. Likewiſe, the *Theory* of Numbers, and their principal *Properties*; demonſtrated in a *plain and eaſy Manner*. In Octavo.

II. *The Elements of Geometry*: In which the principal Propoſitions of *Euclid*, *Archimedes*, and *Others*, are demonſtrated after the moſt eaſy Manner. To which is *added*, a Collection of uſeful *geometrical* Problems. In Octavo.

III. *The Method of Increments*. Wherein the Principles are demonſtrated, and the Practice thereof ſhewn in the Solution of *Problems*. In Quarto.

Printed for and ſold by J. Nourſe, *oppoſite* Catharine-ſtreet *in the* Strand, *Bookſeller in ordinary to his Majeſty*, 1763.

☞ THE above uſeful BOOKS of *Arithmetic* and *Geometry*, are a *Cyclomathefis*, or an *eaſy Introduction* to the *ſeveral Branches of Mathematics*, with what is deſigned to be *continued* by the ſame *pithy Author*. Who has actually improved all the *Arithmetic* and *Geometry* hitherto publiſhed, in the *ſhorteſt* and *cleareſt* Method; wherein *Euclid* himſelf ſtands corrected and improved. Who has ſo treated his ſeveral Subjects given us for the *Inſtruction of young Students before they enter upon the more abſtruſe and difficult Parts of Science*, that little or no Room is left for former or future Productions on the ſame Subjects: His Writings being ſo truly *claſſical*. Who, by travelling through every thorny *Path of Science*, has left Nothing unimproved; and being equal to the moſt *arduous Undertaking*, at a Period of Life when his *Vigour* of Mind keeps amazing Pace with his *Judgement*, Nothing (in our ſincere Opinion) of modern Science appears more deſerving of public Regard. As an *experienced General* performs Wonders with a *ſmall Army*, ſo this *capable Author*, with the *fewneſt* Terms and *ſhorteſt* Methods, vanquiſhes all Difficulties!

1764.	Month and Week Days.						
r. Agt the MD, above	1	2	3	4	5	6	7
Wk-d. ſtand all the	8	9	10	11	12	13	14
h-ds. anſwr thereto.	15	16	17	18	19	20	21
ſo, und r the Mth-day	22	23	24	25	26	27	28
the Mth, ſtands the	29	30	31				
eek-day correſpond.							
uary. April. July.	S	m	t	w	th	f	ſ
ebruary. Auguſt.	w	th	f	ſ	S	m	t
arch. November.	th	f	ſ	S	m	t	w
May.	f	ſ	S	m	t	w	th
June.	ſ	S	m	t	w	th	f
Septem. Decem.	S	m	t	w	th	f	ſ
October.	m	t	w	th	f	ſ	S

Add to Month-day for the D's Age.		New D.	Full D.	Sun riſes. 1ſt	11th	21ſt
Jan.	27d	3d	18th	8h 5m	7h 56	7h 45
Feb.	28	2	17	7 27	7 9	6 50
Mar.	27	2	17	6 34	6 14	5 54
Apr.	29	1 30	16	5 33	5 13	4 54
May.	0	30	15	4 36	4 20	4 5
June.	1	29	13	3 52	3 45	3 43
July.	1	28	13	3 46	3 53	4 3
Aug.	3	27	11	4 19	4 35	4 53
Sept.	4	25	10	5 14	5 31	5 53
Oct.	5	25	9	6 12	6 31	6 52
Nov.	6	23	8	7 12	7 30	7 45
Dec.	7	22	8	7 57	6 5	6 8

Example I. *To find the Day of the Month to the 1ſt Sunday in May.*

Againſt *May*, and above S, ſtand 6, 13, 27, all the *Sunday* Month-days. So 6th of *May* is the 1ſt *Sunday*.

Example II. *To find the Week-day to the 5th of* July.

Under 25, and againſt *July*, ſtands w, or *Wedneſday*, for Anſwer.

So for the Reſt.

Ex. Mar. 1
Add 27
D's Age 28 Days.
Ex. May 25
Add 0
D's Age 25
Sub. 30 or 29, as 1ſt and 2d Col. make 30 or 29.

New D. 3d of Jan.
New D. 22d of Dec.

Full D. 18th Jan.
Full D. 8th of Dec.

Againſt Jan. Sun riſes under
h m
1ſt 8 5
11th 7 56
21ſt 7 45
reſpectively.

Whence, the Riſing and Setting for intermediate Days are known.

Sun enters			☉ and D Places at New D.	Add or ſub. to or fr. D South & for her Sett & or Riſ.	
	th		s o	D's	
Jan.	♒	19	9 13	Place.	Arc ±
Feb.	♓	19	10 13	3 Signs	8h½
Mar	♈	20	11 12	4 2	8 ¼
Apr.	♉	19	0 12	5 1	7 ¼
			1 10		
May.	♊	20	2 9	6 0	6 ½
June	♋	21	3 8	7 11	5 ¼
				8 10	4 ¼
☉'s Place			Req. D Pl.	9 —	4
25. 1764.			May 26,	9 20	4 ¼
☉ Pl. 2s 0°			1764.	10 19	5 ¼
Ds. + 5			D's Age 25	0 0	6 ¼
D in II 2 5			by 13° ½	0 29	7 ¼
			mas 10 29	1 28	8 ¼
Id or ſubtr. for Days or under			D Pl. at N. 2 9		
Day of the entering a			D P. 1s 8 required.		

Sun enters		d	☉ & D Pla at N. D. s o
July.	♌	22	4 6
Aug.	♍	22	5 5
Sep.	♎	22	6 3
Oct.	♏	22	7 2
Nov	♐	21	8 2
Dec.	♑	21	9 1

Req. D's Riſ. & Sets *May* 26, 1764.
D Pl. 1s 8°
Arc ±7h ½ 25th
D Sou 20 47m 25th
D ſets 4 42. 26th
D riſes 1 32 Mor.

The D's Age × d by 8 Tenths gives the Time of her South. To which add 2½ Hours for high Water at *London*.

CHRONOLOGICAL NOTES.

Do. L. N. S. AG	Jul. Per. 6477 Yr
—— O. S. D	Olympiads 2539
Gol. No. 17	Found. Ro. 2516
Epact 26	Nabonaſſar 2310
☉'s Cycle 10	Hegira 1142
Indiction 12	Gregorian 182
Fe. 19. Septua.	Jun. 17. Trinity.
Mar. 7. Aſh W.	Dec. 2. Advent.
Ap. 22. Eaſter.	Mar. 14, 16, 17.
May 28, 29, 30.	May 13, 15, 26.
Rogation-ds.	Sept. 19, 21, 22.
Ma. 31. Aſcen.	Dec. 19, 21, 22.
Jun. 10. Whit.	Ember-days.

High Water, *b* before, and *a* after, the Time at *London*. See P. 85. *Pal.* 1763.

Buoy of Nore	*b*	1h 30m
Dower	*b*	3 9
Gravesend	*b*	1 29
Hull	*a*	3 39
Harwich	*b*	3 30
Plymouth	*a*	3 10
Portſmouth	*b*	2 0
Rocheſter	*b*	1 20
Spithead	*b*	3 0

Time H. Water, *Lond. May* 26, 1764. (D's Age 25 Days old

The Uncertainty *of* CHRONOLOGY. *According to Sir* Iſaac Newton.

THE *Greek* Antiquities are full of *poetical* Fictions; becauſe the *Greeks* wrote Nothing in Proſe, before the Conqueſt of *Aſia* by *Cyrus* the *Perſian*. Then *Pherecydes Scyrius* and *Cadmus Mileſius* introduced the writing in Proſe. *Pherecydes Athenienſis* about the End of the Reign of *Darius Hyſtaſpes*, wrote of Antiquities, and digeſted his Work by Genealogies, and was reckoned one of the beſt Genealogers. *Epimenides* the Hiſtorian proceeded alſo by Genealogies; and *Hellanicus*, who was 12 Years older than *Herodotus*, digeſted his Hiſtory by *Ages*, or Succeſſion of *Prieſteſſes* of *Juno Argiva*. Others digeſted theirs by the Kings of the *Lacedemonians*, or Archons of *Athens*.

Hippias the *Elean*, about 30 Years before the Fall of the *Perſian* Empire, publiſhed a *Breviary*, or Liſt, of the *Olympic Victors*; and about 10 Years before the Fall thereof, *Ephorus*, the Diſciple of *Iſocrates*, formed a *chronological Hiſtory* of *Greece*; beginning with the Return of *Heraclides* into *Peloponneſus*, and ending with the Siege of *Perinthus*, in the 20th Year of *Philip*, the Father of *Alexander the Great*: But he digeſted Things by *Generations*, and the Reckoning by *Olympiads* was not yet in Uſe; nor doth it appear that the Reigns of Kings were yet ſet down by Numbers of Years. The *Arundelian Marbles* were compoſed 60 Years after the Death of *Alexander the Great*, (*Ann.* 4. *Olymp.* 128) and yet mention not the Olympiads: But, in the next Olympiad, *Timæus Siculus* publiſhed a Hiſtory of ſeveral Books, down to his own Times, according to the Olympiads, comparing the *Ephori*, the Kings of *Sparta*, the Archons of *Athens*, and the Prieſteſſes of *Argos*, with the Olympic Victors, ſo as to make the *Olympiads*, and the *Genealogies* and Succeſſions of *Kings*, *Archons*, and *Prieſteſſes*, and poetical Hiſtories ſuit with one another, according to the beſt of his Judgment; and where he left off, *Polybius* began and carried on the Hiſtory.

So then a little after the Death of *Alexander the Great*, they began to ſet down *Generations*, *Reigns*, and *Succeſſions*, in Numbers of Years, and by putting Reigns and Succeſſions equipollent to Generations, and 3 Generations to a 100 or 120 Years, (as appears by their Chronology,) they have made the Antiquities of *Greece* 3 or 400 Years older than the Truth: And this was the Original of the *technical* Chronology of the *Greeks*. *Eratoſthenes* wrote about an 100 Years after the Death of *Alexander the Great*: He was followed by *Apollodorus*, and theſe two have been followed ever ſince by Chronologers.

But how uncertain their *Chronology* is, and how doubtful it was reputed by the *Greeks* of thoſe Times, may be underſtood by theſe Paſſages of *Plutarch*: *Some reckon*, ſaith he, Lycurgus *Contemporary to* Iphitus, *and to have been his Companion in ordering the Olympic Feſtivals*: *Amongſt whom was* Ariſtotle *the Philoſopher arguing from the Olympic Diſc, which had the Name of* Lycurgus *upon it*: *Others ſupputing the Times by the Succeſſion of the Kings of the* Lacedæmonians, *as* Eratoſthenes *and* Apollodorus, *affirm that he was not a few Years older than the firſt Olympiad*. Firſt *Ariſtotle* and ſome Others made him as old as the firſt Olympiad; then *Eratoſthenes*, *Apollodorus*, and ſome Others made him above a 100 Years older. And in another Place *Plutarch* tells us: *The Congreſs of* Solon *with* Cræſus *ſome think they can confute by Chronology. But a Hiſtory ſo illuſtrious, and verified by ſo many Witneſſes, and* (*which is more ſo agreeable to the Manners of* Solon, *and ſo worthy of the Greatneſs of his Mind, and of his Wiſdom*) *I cannot perſuade myſelf to reject, becauſe of ſome chronological Canons, as they call them*: *Which Hundreds of Authors correcting, have not yet been able to conſtitute any Thing certain, in which they could agree among themſelves about Repugnancies*. It ſeems the Chronologers had made the Legiſlature of *Solon* too antient to conſiſt with the *Congreſs*.

For reconciling ſuch *Repugnancies*, Chronologers have ſometimes doubled the Perſons of the Men. So when the Poets had changed *Io*, the Daughter of *Inachus* into the *Egyptian Iſis*, Chronologers made her Huſband *Oſiris* or *Bacchus*, and his Miſtreſs *Ariadne* as old as *Io*, and ſo feigned that there were two *Ariadnes*, one the Miſtreſs of *Bacchus*, and the other the Miſtreſs of *Theſeus*, and two

Minos's their Fathers, and a younger *Io*, the Daughter of *Iasus*, writing *Iasus* corruptly for *Inachus*. And so they have made two *Pandions* and two *Erechtheus*'s, giving the Name of *Erechthonius* to the first; *Homer* calls the first *Erechtheus*; and by such Corruptions they have exceedingly perplexed *antient History*.

And as for the Chronology of the *Latins*, that is still more uncertain. *Plutarch* represents great Uncertainty in the Originals of *Rome*, and so doth *Servius*. The old Records of the *Latins* were burnt by the *Gauls* 64 Years before the Death of *Alexander the Great*; and *Quintus Fabius Pictor*, the oldest Historian of the *Latins* lived 100 Years later than that King.

In sacred History, the *Assyrian* Empire began with *Pul* and *Tiglathpilassar*, and lasted about 170 Years. And, accordingly, *Herodotus* hath made *Semiramis* only 5 Generations, or about 166 Years older than *Nitocris*, the Mother of the last King of *Babylon*. But *Ctesias* hath made *Semiramis* 1500 Years older than *Nitocris*, and feigned a long *Series* of Kings of *Assyria*, whose Names are not *Assyrian*, nor have and Affinity with the *Assyrian* Names in Scripture.

The Priests of *Egypt* told *Herodotus*, that *Menes* built *Memphis*, and the sumptuous Temple of *Vulcan* in that City; and that *Rhampsinitus Mœris*, *Asychis*, and *Psammiticus* added magnificent *Porticos* to that Temple. And it is not likely that *Memphis* could be famous before *Homer*'s Days, who doth not mention it, or that a Temple could be above 2 or 300 Years in building. The Reign of *Psammiticus* began about 655 Years before *Christ*, and I place the Founding of this Temple by *Menes* about 257 Years earlier,; but the Priests of *Egypt* had so magnified their Antiquities before the Days of *Herodotus*, as to tell him that from *Menes* to *Mœris* (who reigned 200 Years before *Psammiticus*) there were 330 Kings whose Reigns took up as many Ages, that is 11 Thousand Years, and had filled up the *Interval* with feigned Kings, who had done Nothing. And before the Days of *Diodorus Siculus* they had raised their Antiquities so much higher, as to place 6, 8, or 10 new Reigns of Kings between those Kings, whom they had represented by *Herodotus* to succeed one another immediately.

In the Kingdom of *Sicyon*, Chronologers have split *Apes*, *Epaphus*, or *Epopeus*, into two Kings, whom they call *Apis* and *Epopeus*, and between them have inserted 11 or 12 feigned Names of Kings who did Nothing; and thereby they have made its Founder *Ægialeus*, 300 Years older than his Brother *Phoroneus*. Some have made the Kings of *Germany* as old as the Flood; and yet before the Use of Letters, the Names and Actions of Men could scarce be remembered above 80 or 100 Years after their Deaths: And therefore (saith the *great Newton*) I admit no Chronology of Things done in *Europe* above 80 Years before *Cadmus* brought Letters into *Europe*; none of the Things done in *Germany* before the Rise of the *Roman* Empire.

Now since *Eratosthenes* and *Apollodorus* computed the Times by the Reigns of the Kings of *Sparta*, and (as appears by their *Chronology*, still followed) have made the 17 Reigns of these Kings in both Races, between the Return of the *Heraclides* into *Peloponnesus* and the Battle of *Thermopylæ*, take up 622 Years, which is after the Rate of 17 Kings of that Length, is no where to be met with *in all true History*; and Kings, at a moderate Reckoning, reign but 18 or 20 Years apiece one with another: I have stated the Time of the Return of the *Heraclides* by the last Way of Reckoning, placing it about 340 Years before the Battle of *Thermopylæ*. And making the Taking of *Troy* 8 Years older than that Return, according to *Thucydides*, and the *Argonautic* Expedition a Generation older than the *Trojan* War, and the Wars of *Sesostris* in *Thrace*, and Death of *Ino* the Daughter of *Cadmus*, a Generation older than that Expedition.

N. B. As Chronology appears to be so uncertain and corrupted, if Mr. *Kennedy* had not corrupted *astronomical* Computation, a Science of Certainty, he might have erred and blundered on in *Chronology* undisturbed, with other Corrupters and Blunderers in that miry and doubtful Road.

☞ *Paradox* II. *proposed, by Mistake, from Memory, before in* Ladies Diary. — *Copying a Paradox or an Ænigma being* unpatdonable. ⁂ M

* Mr. *Brown*, of *Portsmouth-Common*, shews himself in the wrong in his empty *Objection* to two Sols to Q. 28, P. 56, *Pal.* 1763, in *Lond. Mag.* for *Aug.* 1763, or he would at once have produced his own *Solution* and *Proof*.

To find the Date of the Year when the Sun enters a Kennedian *Equinox or Solstice at a given Time in the 24 Hours.*

RULE. Take the Dif. between the given Time for which a Date is required, and the Time of a *Kennedian Equinox* or *Solstice* to a given Date, for Part of the Time to be added to the given Time for Years back, or subtracted for Years forward. Divide the Minutes of that Dif. by 11, for Part of the Years back to be subtracted, or Years forward to be added to the given Date, noting the *Remainder* in 11th Parts. Also multiply $130\frac{10}{11}$ Years, (when 1 Day is added for those Years back, or subtracted for those Years forward) by the said Remainder or Number of 11th Parts, in the Dif. divided by 11, which Product added to the former Years and Number of 11th Parts, will give a whole Number of Years, (to be tried by the Dates of 4 given Equinoxes or Solstices till it is divisible by 4;) which Years then subtracted for Years back, or added for Years forward from and to the Date of the given Equinox or Solstice, with as many Days added or subtracted (contrarily) for Years back or forward, as the Number of the said Remainder, together with said first Dif. in Hours and Minutes, and the Result will be the Date and Time of the *Kennedian* Equinox, required. — Without his perplexed Method.

Required ☉ in ♎ at 11h 59m at Night, Years back.

1760 *Sept.* 11d 3h 7m *Greenwich*. [*See P.* 59, *this* Pal. *for the analytic Method.*

11 59

—572+Rem. 4d|8 52 = 532m, divided by 11=$48\frac{4}{11}$ Yrs back. Here rem. 4.

$130\frac{10}{11}$ by 4 = $520\frac{40}{11}$

S. *Ch.* 1188 *Se.* 15 11 59 ☉ in ♎ as bef. req.

572 divisible by 4, therefore right.

In the 34th Year of K. *Henry* II.

Required ☉ in ♎ 23h 56m past Noon.

1753 *Sept.* 11d 10h 24m *Greenwich*.

23 56

—1252+rem. 9d|13 32=812m divided by 11=$73\frac{9}{11}$ Yrs back. Here rem. 9.

$130\frac{10}{11}$ by 9 = $1170\frac{90}{11}$

S. *Ch.* 501 *Sep.* 20 23 56 ☉ in ♎ req.

So for the Rest, for Years back or forward. 1252 divisible by 4, therefore right.

Mr. *Williams* of *Hackney* makes it 3820 before *Christ*, by adopting *Kennedy*'s perplexed Method of Computation.

By the like Method ☉ in ♎ 239 since *Christ*, *Sept.* 23d 11h 58m.

By Mr. *Williams* of *Hackney* 2742 before *Christ*, same Time.

To find the Kennedian *Equinoxes and Solstices.*

RULE. Divide by 4, the Dif. of Years betwixt the *given Date* for which the *Kennedian Equinox* or *Solstice* is required, and *that Date* of 4, *equally distant* from *Biffextile*, (see P. 97, this *Pal.*) to which the *Equinoxes* and *Solstices* are given. Then take out the Time, from a Table, for the Quotient, when the Remainder is 0, according to 44 Minutes for each 4th Year, which being collected into one Sum, or got by multiplying the said Quotient by 44 Minutes, you must add or subtract that Time according to the Sign + for Years back, or — for Years forward, to or from the Time of the *given Equinox*, for the Time of the *Kennedian* Equinox or Solstice, required.

Yrs. f. *Ch.*	*Sep.* ☉ in ♎ O. S.	Yrs aft. Biff.
1752	11d 4h 35m	0
1753	11 10 24	1
1754	11 16 13	2
1755	11 22 2	3

Example. Required the Time of the ☉ in ♎ 1417 ſin. *Cb.* 1 Year after Biſſ.

1753 1 Yr. af.	B. Yrs. back.			
1417 [Biſ.		d	h	m
——— B. Yrs	80	2	10	40
4) 336(84 back	4	0	2	56
the Quotient.	84	+2	13	36

	d	h	m
1753 *Sept.* 11	10	24	O.S. ☉ in ♎
B.Yrs. 84 X 44^m =	+2	13	36
1417, *Sept.* 14	0	0	☉ in ♎ req.

fr. a Table.

N. B. 71242 *Ken.* Lun. 2^d 17^h 14^m 6^s 30th in 5760 m. fol. Yrs. and fr. 1753 *Oct.* 30^d 5^h 20^m 31^s m. full ☽, *Halley*; 71243 Lun. back make full ☽ bef. *Chr.* 4008 *Oct.* 23^d 9^h 50^m 36^s not *Oct.* 24, *Ken.* f. m. Day, erring from himſelf. Mr. *River*'s Pamphlet is all an *Error*, intitled *The Solar Period the Baſis of Chronology.*

Thus Kennedy *and his Friends may ſee*
All his large Labours in Epitome.

*** Mr. *River*, in a Letter dated *Sept.* 27, 1762, *modeſtly* ſays, "I challenge "the whole Tribe of aſtronomical Table-Makers to ſhew one falſe Calculation in "*Kennedy*'s Book; and I muſt retain my Opinion, that the Equations of the "Sun's Place, the Sign of Anomaly, or Diſtance from his Apogee, and the E-"quation of Time anſwering to the Anomaly, are of no Uſe in Calculation."

☞ *Ferguſon* rejects the Form of *Pound*'s lunar Tables, beginning the Year with *January*, who begins his Year in *March*.—Yet in *Newton*'s ſolar Tables, P. 28 of his *aſtron. Pamphlet*, he adopts that Form, adding a Day and Day's Motion after *February*. — His Table (P. 20. *Pamph.*) is needleſs, making *Pound*'s eaſy Method difficult. — His ſolar Numbers, *Newton*'s; his Sun's Equation, *Morris*'s or *Bradley*'s; ſee P. 75, *Pal.* 1759, inconſiſtent with *Newton*'s Orbit and M. Mot.

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†‡† We recommend, as very uſeful for Beginners an *Introduction to the Doctrine of Fluxions*, by Mr. *John Rowe*, the ſecond Edition, with Additions and Improvements: Sold by *J. Johnſon*, oppoſite the *Monument*, Price bound 3*s.* 6*d.* — Alſo *Mathematics*, by the late Rev. Mr. *Weſt*, of *Exeter*, ſecond Edition; of *Problems*, *Solutions*, *Scholiums*, *Corollaries*, and *Demonſtrations*, in *Fluxions*, uſeful to Learners and pleaſing to Proficients. In which Books the *Principles* of the Art are ſhortly and well explained. — Price, bound, 3*s.*

¶b¶ At *Waddington*'s *Academy*, in *Three-Tun Court*, *Miles-lane*, *Canon-ſtreet*, *London*, Gentlemen and Ladies are taught *Writing*, *Arithmetic*, *Latin*, *French*, and *Drawing*, and every Branch of the *Mathematics*, the Uſe of the *Globes*, and of *aſtronomical Inſtruments* for taking Obſervations, how to compute *Eclipſes*, &c. Where *Gentlemen* are ſpeedily qualified in the *Theory and Practice of Navigation*, are fitted for *Mercantile Buſineſs*, and *Connoiſſeurs* improved in *Philoſophy*.

A NEW RULE *and* PROPOSITION. *For the Uſe of* Navigators.

To find the Latitude of the Ship's Place at Sea, on a given Day of the Month, from the celeſtial Globe, mechanically.

According to the Method by a SEA-OFFICER *of Diſtinction.*

RULE. The Altitudes of 2 Stars being taken at the ſame Time, the Extent of each Co-Altitude being taken in the Compaſſes, from the Quadrant of Altitude, and one Foot thereof ſet in each reſpective Star's Center, having the Co-Altitude of the Extent taken, and the other ſweeping an Arch on the Globe's Surface, by Means of a *black lead Pencil*, the Point of thoſe Arches *Interſection* being turned to the Braſs Meridian of the Globe will, *at once*, ſhew the *Latitude of the Ship's Place*, required; becauſe the *Interſection* of two Zenith Diſtances, is in the *Zenith* of the Place of Obſervation, or Lat. fr. the Equator. — Or, having 2 Quadrants of Altitude, *graduated* with *Altitudes* and *Zenith-Diſtances*, fitted to ſlide on the

Braſs

Brass Meridian, the *Slide* must be moved forward or backward, *gradually*, till the 2 Stars Altitudes, or *Zenith-Distances*, on the Globe *coincide* with their Altitudes, or Zenith-Distances, taken; when the *Slide will rest at the Latitude of the Ship's Place.* — An Hour Circle, to which a short Index revolves, fixed *under* instead of above the *Brass Meridian* of a Globe, for the Poles to shift even with, or below, the *Horizon*, is another Advantage in the Use of the Globes.—And the larger the Globe is the nearer the Lat. will be determined by the Above Method.—*The Lat. may be accurately determined by trigonometrical Computation, which will be a proper Exercise for young Navigators, to compare the Result of their Operation with the foregoing* mechanical Method *of determining the same.*

Proposition. *First invented and proposed by the* Author *of the* Royal Astronomer and Navigator, *in the Papers some Years ago, but never put in Practice.* — From the Sun's *Altitude* and *Azimuth* taken twice, on the same Forenoon, at about an Hour, or less, asunder, (both *Azimuths* from the *North* being above 90°,) or, from a Star's *Altitude* and *Azimuth* twice taken, at about an Hour's Distance, (each Azimuth from the *North* above 90°,) before it comes to the Meridian, to determine, from thence, *universally*, the *Latitude of the Ship's Place*, (Sun's Declination and Month-day correspondent if required) and also the Time, by *Day* or *Night*, when each Observation was made.

PUT a and b for the nat. *Sine* and *Cos.* of the 1st Alt. of the *Sun* or *Star*; and v for Cos. of *Azimuth*; c and d for *Sine* and *Cos.* of 2d *Alt.* and w for *Cos.* of *Azimuth*, (Radius being *Unity*;) x for *Sine* Lat. and $\sqrt{1-xx}$ its *Cos.* — Then, by P. 226, *Royal Astron. and Navigator*, $b\sqrt{1-xx}+avx = \text{Cos. Sun's Decl.} = d\sqrt{1-xx}+cwx$. Solved, $\frac{x}{\sqrt{1-xx}} = \frac{b-d}{cw-av} = Tang.$ Latitude.

In Words. *The Difference of the natural Cosines of the two Altitudes, divided by the Difference of the* Rectangles *of the Sine of each Altitude into the Cosine of its respective Azimuth, will be equal to the natural Tangent of the Latitude of the* Ship's Place at Sea. — *The natural Cosine of the Sun's Declination is known, if the Month-day is known; as the Declination of a Star (observed) is always known; from whence the* Sun *or* Star's *angular Distance from the Meridian may be readily determined by the said* Prop. P. 226, Royal Astron. —— If the Month-day were unknown, *Then the nat. Cosine of the Sun's Declination would be equal to the Difference of the* Rectangle *of the Cosines of Latitude and either Altitude, and of the* Product *of the Sine of that Altitude, Cosine of the respective Azimuth, and Sine of the Latitude,* (from a *Principle* of supposing the Sun to have no *sensible* Change in his Declination for an Hour, as that of a Star never changes in that Interval) *according to what is shewn above.*

N. B. The Azimuth to each Altitude should be taken *as correct as possible*; but as both *Azimuths* are taken by the same *Azimuth-Compass* (which should be the best that can be procured) if there should happen to be a *small Error* in the Variation allowed for, the *Error* in the Latitude will nevertheless be *insensible.*

The *Method* of determining the *Latitude* by equal Altitudes, taken at some Hours Distance, while the Ship continues under Sail *(yet in the Operation is supposed to remain at Rest in the same Place, during the Interval of Observation)* is *erroneous*, in Respect of the Difference of Latitude sailed during that Interval.

We respectively offer to the *Gentlemen of the Navy*, the *Practice of Navigation*, as exemplified by the *Seaman's Ready Computer* of a Ship's Reckoning, in our *Royal Astron.* P. 273. Whereby any Person, by the Help of Addition of a few Figures only, taken out of 3 *Tables* may keep a Ship's Reckoning at Sea, accord-

ing

ing to all the Methods of *Sailing in Uſe*; without the Trouble and Attention of uſing Scale, Compaſſes, Chart, or trigonometrical Calculation.

*** And here we think it our Duty to acknowledge the Honour done us in 30 of our *Royal Aſtronomers and Navigators* introduced on Board his Majeſty's Ship, the *Princeſs Louiſa*, for the Uſe of the Gentlemen there, by the Recommendation of Admiral *Tyrr—l*, commanding a *Squadron* ſent on a Station, for three Years, to the *Weſt Indies*; who ſailed from *Portſmouth* the latter End of *September* 1763. Under whoſe auſpicious Direction and Superintendence, the Right Hon. the Lords of the Ad—ty have been pleaſed to appoint *qualified Perſons* for obſerving a *Series* of the *Eclipſes* of *Jupiter's firſt Satellite*, on Board and alſo on Shore, during that Voyage and Station. Mr. *Irwin's* Marine-Chair, perfected by Mr. *Siſſon*, in the *Strand*, and all Sorts of the moſt accurate and new improved Inſtruments for obſerving, by the ſame *excellent Artiſt*, being provided, there is now no Doubt of the *Longitude's being diſcovered and ſettled to a very uſeful Nearneſs*, by a Compariſon of the Times of theſe, with the Times of a *Series* of other Obſervations, taken at different Places, *abroad* and *at Home*, on the ſame Days. *Harriſon's* uniform *Time-Meaſurer* will be alſo put to the *Proof*, whether it will anſwer the *Ends propoſed by its Uſe*; ſince there is *no Way* to determine the Truth, but by a Compariſon of the *Time he carries abroad* with the *Times of Obſervations* there made; and then with the *correſponding Times* of the Obſervations made at his Return Home. Though he refuſes a Trial of his *Time-Keeper* (it is ſaid) by the *Regulator* for the niceſt Obſervations, at the *Royal Obſervatory* at *Greenwich*. Mr. *Harriſon* relies on the Words of the *Longitude Act* in his Favour, (whether he ſerves his Country or not); which gives the Reward of 10000 *l.* if his *Time-keeper* comes within 60 *geographical Miles*, or about 1 Deg. ½ Long. in Lat. of *Land's End*, or 15000*l.* if within 40, or 20000*l.* if within 30 *geographical* Miles, *(ſee the Act,)* when he returns and makes Land; which may happen for *once* or *twice* by *Chance*, not to be truſted to. Mr. *Siſſon* bids faireſt, by his *mechanical* Contrivance, ſolving the Moon's Diſt. from a Star, and finding her correct Place. — As the *aſtronomical Atchievements* of the diligent and ſkilful Obſervers ſent abroad, will greatly merit the public Attention, ſo to the *Patron* of *Science*, ſuperlatively arduous for his Country's *Good*, and to encourage Genius and uſeful Improvements, unceaſing Applauſe will be due.

To him be Honour — whoſe exalted Mind
Teems with all Virtues *of the ſocial Kind*,
Guardian *of Arts, of Merit, and Mankind!*

The BRITISH HERO. *Humbly addreſſed to the Right Hon. Lord* Ligonier.

SUCCESS in Arms may raiſe a *Hero's* Name,
And great *Exploits* exalt him into Fame;
Rivers of Blood may by his Arms be ſhed,
And Nations deſolate his Honours ſpread;
But *Ligonier* not ſo delights to hear
The Trumpet's Sound, and brazen Voice of War.
Friend to Mankind is his ſupreme Delight;
To conquer and to ſave he dares the Fight.
Benevolence has more attractive Charms
Than all the Dazzle of *licentious* Arms!
Merit obſcur'd, and Valour's Sons oppreſs'd,
Are ſtill the Burthen of his anxious Breaſt,
Till by his gen'rous Aid he makes them bleſt.
Dear to each *Briton*, to each *Soldier* dear,
For him the Nation's *Prayers* and *Praiſe* we hear.
Long may he live the *Pillar* of the Throne,
And wear *unrival'd Laurels* all his own! R. H.

To

To the Palladium-Author, *from Mr.* Edward Johnſon, *Mathematical Maſter.*

"SIR, *Hull, Oct.* 8, 1763.

"I have juſt got your *Royal Aſtronomer*, which is the beſt *Performance* I have "ever ſeen, and as ſuch I have recommended it to my *beſt Friends*, and ſhall do "all in my Power (at all Times) to promote the Sale of it. I return you Thanks "for theſe your ingenious Labours, and ſincerely wiſh they may be rewarded ac- "cording to their Merit.—I have endeavoured to promote the *Palladium* by get- "ting new *Readers*; ſeveral of my Acquaintance have promiſed to take it in for "the next Year; but ſome would not ſubſcribe.—If the *Pall.* be publiſhed before "the *Diaries*, and properly *adverti ſed*, it will help the Sale of it much, as Num- "bers of the People in the Country know Nothing of ſuch a *Work* being publiſhed.

"Mr. *Metcalf* of *Wentworth-houſe* called upon me lately, I am glad to find "ſo great a Friend to the *Palladium* Author. He informed me of the Death of "*Cheſterfieldienſis* your late Correſpondent.

"Some of the *Palladium* Readers think if it could be abridged ſo as to be ſold "for 1*s.* the Number of Readers would be greatly encreaſed; as there are ſo *few* "Encouragers of Science in this Nation. *I am, Sir,* (wiſhing you Health and Happineſs) *Your moſt humble Servant*, EDWARD JOHNSON."

Anſwer. We are extremely obliged to this our *worthy Correſpondent* for his good Wiſhes and Endeavours to promote the *Palladium*. But the Expence of printing it is ſo great, and the Buyers ſo few, that, without it is ſold for an *enlarged Price*, the Sale theſeof cannot anſwer the Expence of printing ſuch copious and difficult Matter. Whoſe *future Exiſtence* muſt therefore depend on a *Subſcription*; as without which there will be no more *Palladiums*.—The Experiment of abridging the Work *(which is but abridging the Improvement of Science)* ſo as to ſell it for 1*s* has been tried, and found not to anſwer. The *mathematical Magazine*, of Price 6*d.* ſell in a *few* Months, nor could any *mathematical Miſcellany* hitherto (though never ſo well conducted) be kept long alive by the Bookſellers, for ſo ſmall a Price as 1*s.*—All theſe Kinds of Things, in the beſt Hands, have dropped for Want of a ſufficient Number of Readers.—The *Connoiſſance des Temps*, a foreign *Production*, ſent among us, (becauſe we have no *Encouragers* of ſuch an uſeful Work at Home, though a NAUTICAL EPHEMERIS for the Uſe and Honour of this Nation is much wanted) ſells for 3*s.* 6*d.* not containing more Labour than our *Palladium*.—And *Ferguſon's* new *ſolar* and *lunar Tables*, for computing the Orbit New and Full Moons, *(erroneous in their mean Motion, Argument, and Equations)* ſell for 2*s.* 6*d.* though but a *ſmall Pamphlet* in a *blue Cover*, of 63 Pages; each containing not Half the Quantity of a *Palladium Page*.—Which ingenious *mechanical* more than *mathematical* Author has therein connected and reduced to Time in mean Motion of ☽ fr. ☉, with a contrary Sign, the common *lunar Equations* of the ſame Argument, in Syzygies, and alſo the *Sun's Equation* with its proper Sign, (as we directed and demonſtrated ſhould be done, at P. 393, *R. Aſtron.* detecting the Error of his *old Equation Tables in his Aſtronomy*, reduced to Time in mean Motion of the Moon, only; yet unacknowledged by Mr. *Ferguſon*; as was alſo unacknowledged *the going in our Name, without our Knowledge and Conſent, to the Printer of the* R. Aſtron. *to ſee the Sheets of that Work while printing*,) yet Mr. *Ferguſon* has again *blundered* in computing the Times of his Orbit *Full Moons* (omitting the *Addition* of 6 Signs in the Argument of the Moon's equated Anomaly and Sun's Anom. — ☽ Anom.) contrary to his own *Precept*, (P. 11 of theſe Tabs.) "*the Sun's Diſt. fr.* ☽'s *Apogee becomes equal to* ☽'s *mean* "*Anom. at New Moon, and to Moon's m. Anom. at Full by adding* 6 *Signs at Full*," by whoſe omitting which he has rendered his Orbit Full Moons *erroneous*. Theſe *Errors* of his we ſhall ſet to Rights in *new Tables* for computing the Orbit and alſo Ecliptic New and Full ☽s, preparing for the Public, by Equations of Time correſpondent to Deg. of ☽ *from the* ☉; with correct *Motions, Arguments, and Equations*. We alſo propoſe (having proper Encouragement from the GREAT) to publiſh a *correct and very uſeful* NAUTICAL EPHEMERIS, ſerving for 3 Years at a Time forward; for the Uſe of Gentlemen in the NAVY.

An

…ersal and Perpetual SUNDAY-LETTER TABLE, for finding the Sunday Letter or New Style, (at Sight,) for any Year before or since *Christ*: With the Week-day …ſponding to any Day of the Month, at Sight, for ever.

O. S. Rem^rs of Cent^s. div. by 7, for Yrs since *Christ*

5	0	2	4	6	1	3

N. S. Rem^rs of Cent^s. div. by 4, for Yrs since *Christ*.

0	1	2	3

N. and O. S. Sunday Letters.

BA	C	E	G

N.S. *Sund.* Let. for Hund^s.

BA	DC	FE	AG	CB	ED	GF
gfe	*bag*	*dcb*	*fed*	*agf*	*cba*	*edc*
0	4	8	12	16	20	24
28	32	36	40	44	48	52
56	60	64	68	72	76	80
84	88	92	96			
	9	4	8	12	16	20
24	28	32	36	40	44	48
52	56	60	64	68	72	76
80	84	88	92	96		
		0	4	8	12	16
20	24	28	32	36	40	44
48	52	56	60	64	68	72
76	80	84	88	92	96	
			0	4	8	12
16	20	24	28	32	36	40
44	48	52	56	60	64	68
72	76	80	84	88	92	96
12				0	4	8
40	16	20	24	28	32	36
68	44	48	52	56	60	64
96	72	76	80	84	88	92
8	12				0	4
36	40	16	20	24	28	32
64	68	44	48	52	56	60
92	96	72	76	80	84	88
4	8	12	16	20	24	0
32	36	40	44	48	52	28
60	64	68	72	76	80	56
88	92	96				84

Div. Cent^s by 7 for O. and 4 for N. Style; note the ref. e Rem^rs.—Under which, at the Table's Head ſtand the *S.* for *even* Hund^s, and ag^t the ſame on the Side, at the Top reſpect. Col. ſtands the *S.* Let. for the laſt Biſſ. above Hun. N.S. —The 3 follg *ſmall* Let. are for 3 Yrs. folg that Biſ. *find the S. Let. for 1769 ſ. Cb.*—O. & N.S. Rem. are 3 & 1 ag^t which ſtands 68 the laſt Biſ. Yr; above which, at the f the ſame Col. ſtand FE & CB, *S.* Let. O. & N.S. for 1768; *lch* and *agh* reſpy. folg.—Whence, D is the *S.* Let. O. and N.S. 1769, ſ. *Cb.* req.—*For Dates bef. Cb.* Sub. the Date dded to any N^o of 7 Hund. and alſo fr. 1 added to any No ſund. and the Rem^r will be the reſpect. Dates ſ. *Cb.* having me O. & N. S. *Sun.* Let. as for the given Date b. *Cb.* then d as above.—*To find the* S. *Let. O. & N.S. for 1769 b. Cb.* 700=2101; —1762=332, ſince *Cbr.* to which O. S. Rem. is 3, and *Sunday* Letters BA.

400=3601; —1769=1832, ſ. *Cb.* to which N.S. Rem. nd *S.* Let. GA, O. & N.S. *S.* Let. for 1769 *b. Cb.* req^d.

FINIS.

Week and Month-day Table.

Mths.	Sunday Letters. A	B	C	D	E	F	G
	1	2	3	4	5	6	7
Jan. 31	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
Oct. 31	22	23	24	25	26	27	28
	29	30	31	1	2	3	4
	5	6	7	8	9	10	11
Feb. 28	12	13	14	15	16	17	18
Mar. 31	19	20	21	22	23	24	25
Nov. 30	26	27	28	29	30	31	1
	2	3	4	5	6	7	8
Apr. 30	9	10	11	12	13	14	15
July 31	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
	30	31	1	2	3	4	5
	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
Aug. 31	20	21	22	23	24	25	26
	27	28	29	30	31	1	2
	3	4	5	6	7	8	9
Sep. 30	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
Dec. 31	24	25	26	27	28	29	30
	31	1	2	3	4	5	6
	7	8	9	10	11	12	13
May 31	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	31	1	2	3
	4	5	6	7	8	9	10
Jun. 30	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30	

USE. Under the *Sunday* Letter, and againſt the Month, are the *Sundays* and Week-days to the Right and Left of thoſe, in Succeſſion.

Example. The *Sunday* Letters for 1764, N. S. AG, to find the Week-day to *September* 16.

Under G, the *Sunday* Letter, againſt *September*, ſtand 2, 9, 16, 23, 30, all *Sundays*, conſequently 16 is a *Sunday*, required.

Hence the 14th of *February*, 1764, is on a *Tueſday*, becauſe 5, 12, 19, 26, under A, are *Sundays*.

☞ P. 92, L. 13, this *Pel.* for *Year ſet down, &c.* r. *Lunation ſet down, &c.*

THE

PALLADIUM of FAME,

OR

Annual Miſcellany,

For the YEAR of our LORD, 1765.

CONTAINING

Several SUBJECTS of ſelect SCIENCE. With RULES and DEMONSTRATIONS, for the CONDUCT and HAPPINESS of human LIFE: And a LIST, and CHARACTER of *curious* and *uſeful* BOOKS.

Adapted for the *Pleaſure* and *Service* of GENTLEMEN and LADIES, the *Britiſh* YOUTH at *School*, and Perſons at SEA.

The Seventeenth Number publiſhed. To be continued.

By the AUTHOR of the *Royal Aſtronomer and Navigator.*

Here FAME's bright *Temple* ſtrikes admiring *Eyes!*
And living LUSTRES in *Gradation* riſe!
Here each *illuſtrious Artiſt* known to *Fame,*
Attends the GODDESS, and enrolls his Name.

LONDON:

Printed for W. DAVENHILL, at the *Lamb*, *Leadenhall-Street*, C. HENDERSON, at the *Royal-Exchange*, J. WILSON and J. FELL, *Pater-Noſter-Row*, C. CORBETT, in *Fleet-Street*; and ſold alſo by all the *Mathematical*-Inſtrument-Makers, in *London*. M.DCC.LXV. (*Price* 2 *s.*)

INTRODUCTION.

*** *We ſhall annually continue to give* EXTRACTS, *with our Remarks, from the* beſt Authors, *on the moſt poliſh'd, ſtriking and uſeful Subjects, introductory to our general Deſign; whereby the* PALLADIUM, in Time, will contain all the JEWELS of LITERATURE and SCIENCE. *We ſhall alſo continue to give a Liſt and Character of the choiceſt Books, in every Branch of polite* Literature *and uſeful Science, for the Benefit of thoſe who are not acquainted with the* beſt Books, *their Subjects, Characters, and Prices.*

The TEMPLE of FAME. According to the celebrated Mr. POPE.

I STOOD, methought; betwixt Earth, Seas, and Skies,
The whole CREATION open to my Eyes;
In Air ſelf-balanc'd hung the Globe below,
Where *Mountains* riſe, and circling Oceans flow.
Here naked *Rocks*, and empty Waſtes were ſeen,
There tow'ry *Cities*, and there *Foreſts* green;
Here ſailing Ships delight the wand'ring Eyes,
Here Trees and intermingl'd *Temples* riſe;
Now a clear *Sun* the ſhining Scene diſplays,
The tranſient *Landſcape* now in Clouds decays.
O'er the wide *Proſpect*, as I gaz'd around,
Sudden I heard a wild promiſcuous Sound,
Like broken Thunders, that at Diſtance roar,
Or Billows murm'ring on the hollow Shore:
Then gazing up a glorious PILE beheld,
Whoſe tow'ring *Summit* ambient Clouds conceal'd.
High on a *Rock* of *Ice* (*a*) the Structure lay,
Steep its Aſcent, and Slippery was the Way,
The wond'rous *Rock* like *Parian* Marble ſhone,
And ſeem'd to diſtant Sight of ſolid Stone.
Inſcriptions here of various Names I view'd,
The greater Part by hoſtile *Time* ſubdu'd;
Yet wide was ſpread their *Fame* on Ages paſt,
And *Poets* once had promis'd they ſhou'd laſt;
Some freſh engrav'd appear'd of Wits renown'd;
I look'd again, nor cou'd their *Trace* be found.
Cities I ſaw that other's Names deface,
And fix their own with Labour in their Place:
Their own, like others, ſoon their Place reſign'd,
Or diſappear'd and left the firſt behind.
Nor was the Work impair'd by Storms alone,
But felt th' *Approaches* of too warm a Sun;

For

(*a*) *In Imitation of Chaucer's third Book of Fame.*

For Fame impatient of Extremes, decays,
Not more by Envy than Excess of Praise.
Yet part no Injuries of Heaven cou'd feel,
Like *Chrystal* faithful to the graving Steel;
The Rock's high *Summit*, in the Temple's Shade,
Nor Heat cou'd melt, nor beating Storm invade.
Their *Names* inscrib'd unnumber'd Ages past,
From Time's first *Birth*, with Time itself shall last;
These ever *New*, nor subject to Decays,
Spread and grow brighter with the *Length of Days*.
So ZEMBLA's Rocks (the beauteous *Work* of Frost)
Rise *white* in Air, and glitter o'er the Coast;
Pale Suns unfelt, at Distance roll away,
And on th' impassive *Ice* the Light'nings play;
Eternal Snows the growing *Mass* supply,
'Till the *bright Mountains* prop th' incumbent Sky:
As ATLAS fix'd, each hoary *Pile* appears,
The gather'd Winter of a *thousand* Years.
On this Foundation *Fame*'s high Temple stands;
Stupendous *Pile!* not rear'd by mortal Hands.
Whate'er proud *Rome*, or artful *Greece* behold,
Or elder *Babylon*, it's Frame excell'd.
FOUR *Faces (b)* had the Dome and ev'ry Face
Of various Structure, but of equal Grace:
Four brazen Gates on Columns lifted high,
Salute the diff'rent *Quarters* of the Sky.
Here fabled *Chiefs* in darker Ages born,
Or *Worthies* old, whom *Arms and Arts* adorn,
Who *Cities* rais'd, or tam'd a monstrous Race;
The Walls in venerable *Order* grace.
Heroes in animated Marble Frown,
And *Legislators* seem to think in *Stone*.
WESTWARD, *(c)* a sumptuous *Frontispiece* appear'd,
On *Doric* Pillars of white Marble rear'd,
Crown'd with an *Architrave* of antique Mould,
And Sculpture rising on the roughen'd Gold,
In shaggy Spoils here *Theseus* was beheld,
And *Perseus* dreadful with *Minerva*'s Shield:
There great *Alcides (d)* stooping with his Toil,
Rests on his *Club*, and holds th' *Hesperian* Spoil.
Here *Orpheus* sings, Trees moving to the Sound,
Starts from the Roots and form a Shade around:

(b) The four Fronts, with open Gates, intimate that all Nations facing them are received therein.

(c) Of Grecian *Architecture the Doric Order, peculiarly sacred to Heroes and Worthies.*

(d) This Figure of Hercules *is similar to the Position of the famous Statue of* Farnese.

Amphion there the loud creating *Lyre*
Strikes, and behold a ſudden *Thebes* aſpire!
Citbæron's Echoes anſwer to his Call,
And half the Mountain roll into a Wall:
There might you ſee the length'ning *Spires* aſcend,
The *Domes* ſwell up, the wid'ning Arches bend,
The growing *Tow'rs*, like Exhalations riſe,
And the huge *Columns* heave into the Skies.
The EASTERN *(e) Front* was glorious to behold,
With *Di'mond* flaming and barbaric Gold.
There *Ninus (f)* ſhone, who ſpread th' *Aſſyrian* Fame,
And the great Founder of the *Perſian (g)* Name;
There, in long Robes, the royal *Magi (h)* ſtand,
Grave *Zoroaſter* waves the circling Wand,
The ſage *Chaldeans* rob'd in White appear'd,
And *Brachmans*, deep in deſert Woods rever'd.
Theſe ſtop'd the *Moon*, and call'd th' unbody'd Shades
To midnight Banquets in the glimm'ring Glades;
Made viſionary Fabricks round them riſe,
And airy *Spectres* ſkim before their Eyes;
Of *Taliſmans* and *Sigils* knew the Pow'r,
And careful watch'd the planetary Hour;
Superior and alone, *Confucius (i)* ſtood,
Who taught that uſeful Science to be good.
But on the *South*, along majeſtic Race
Of *Ægypt's Prieſts (k)* the gilded *Niches* grace;
Who meaſur'd Earth, deſcrib'd the ſtarry Spheres,
And trac'd the long Records of *lunar* Years.
High on his Car *Seſoſtris (l)* ſtruck my View,
Whom ſcepter'd Slaves in golden Harneſs drew;
His Hands a Bow and pointed *Javelin* hold,
His giant Limbs are arm'd with Scales of Gold.
Between the Statues *Obeliſks* were plac'd,
And the learn'd Walls with *Hieroglyphics* grac'd;

Of

(e) Eaſtern *Nations.*

(f) Founder of the Aſſyrian *Monarchy.*

(g) Cyrus, *Founder of the* Perſian *Monarchy.*

(h) Chaldeans, *of whom* Zoroaſter *was Chief, ſtudied Magic and Aſtrology, the Learning of the ancient* Aſians.

(i) An antient moral Chineſe Philoſopher, and Law-Giver, living about 2000 *Years ago.*

(k) Their Learning conſiſted moſtly of Geometry and Aſtronomy, who preſerved the Hiſtory of their Nation.

(l) The great Hero of the Ægyptians, *recorded at large, for his Conqueſts, by* Diodorus. *He cauſed himſelf to be drawn in his Chariot by the Kings he vanquiſhed. The Poſture of this Statue, here repreſented, is that deſcribed by* Herodotus, *remaining in his Time.*

Of Gothic Structure was the NORTHERN *(m)* Side,
O'er wrought with Ornaments of barb'rous Pride!
There huge *Coloſſus* roſe, with Trophies crown'd,
And *runic* Characters were grav'd around.
There ſate *Zamolxis (n)* with erected Eyes,
And *Odin (o)* here in mimic *Trances* dies.
There on rude iron Columns, ſmear'd with Blood,
The horrid Forms of *Scythian* Heroes ſtood.
Druids and Bards *(p)* (their once loud Harps unſtrung)
And Youths that dy'd to be by Poets ſung.
Theſe and a thouſand more of doubtful Fame,
To whom old *Fables* gave a laſting Name,
In Ranks adorn'd the Temple's outward Face
The Wall in *Luſtre* and effect like Glaſs,
Which o'er each Object caſting various Dyes,
Enlarges ſome and others multiplies:
Nor void of *Emblem* was the myſtic Wall,
For thus *romantic Fame* increaſes all.
The Temple *ſhakes, the ſounding* Gates *unfold,*
Wide Vaults *appear, and* Roofs *of fretted Gold:*
Raiſ'd on a thouſand *Pillars, wreath'd around*
With Laurel-*Foliage, and with* Eagles *crown'd:*
Of bright tranſparent Beryl *were the Walls,*
The Freezes, *Gold, and Gold the* Capitals:
As Heav'n with Stars, the Roof with Jewels *glows,*
And ever living Lamps *depend in Rows*
Full in the *Paſſage* of each ſpacious Gate,
The ſage *Hiſtorians* in white Garments wait,
Grav'd o'er their *Seats* the Form of *Time* was found,
His *Scythe* revers'd, and both his Pinions bound.
Within ſtood *Heroes*, who thro' loud Alarms
In bloody Fields purſu'd, Renown in Arms.
High on a Throne with *Trophies* charg'd I view'd,
The *Youth (q)* that all Things but himſelf ſubdu'd;

His

(m) Northern Nations, their Learning obſcurer than the Reſt.

(n) Diſciple of Pythagoras, *who taught the Immortality of the Soul to the* Scythians.

(o) Or Woden, *the Name of the great Legiſlator and Hero of the* Goths. *Being Subject to Fits, he perſwaded his Followers that he received Inſpiration during thoſe* Trances; *whence he dictated his Laws. He is ſaid to have invented the runic Characters.*

(p) Prieſts and Poets of thoſe People, ſo celebrated for their ſavage Virtue. Who accounting it a Diſhonour to die in their Beds, they ruſhed on certain Death in Proſpect of a future Life, and for the Glory of being ſung by their Bards, in Praiſe of their heroic Actions.

(q) Alexander *the Great.*

His Feet on *Sceptres* and *Tiara's (r)* trod,
And his horn'd Head bely'd the *Lybian (s)* God.
There *Cæsar*, grac'd with both *Minerva's*, shone;
Cæsar the World's great Master and his own;
Unmov'd, superior still in ev'ry State,
And scarce detested in his Country's Fate.
But Chief were those, who not for Empire fought,
But with their Toils their People's Safety bought:
High o'er the rest *Epaminondas* stood;
Timoleon, (t) glorious in his Brother's Blood.
Bold *Scipio*, Saviour of the *Roman* State,
Great in his *Triumphs*, in Retirement great;
And wise *Aurelius*, in whose well taught Mind,
With boundless Pow'r unbounded *Virtue* join'd,
His own strict Judge, and Patron of Mankind.

Much-suff'ring *Heroes* next their Honours claim,
Those of less noisy, and less guilty Fame,
Fair *Virtue's* silent Train: supreme of these
Here ever shines the *Godlike* SOCRATES:
He *(u)* whom ungrateful *Athens* cou'd expel,
At all Times *just*, but when he sign'd the Shell.
Here his Abode the martyr'd *Phocion* claims,
With *Agis*, not the last of *Spartan* Names:
Unconquer'd *Cato* shews the Wound he tore,
And *Brutus* his ill *Genius* meets no more.

But in the *Center (w)* of the hallow'd Choir,
Six pompous Columns o'er the rest aspire;
Around the *Shrine* itself of *Fame* they stand,
Hold the chief Honours and the *Fane* command.

P. High

(r) Crowns of eastern Princes.

(s) Alexander *the Great's Desire to be thought* the *Son of* Jupiter Ammon, *caused him to wear the Horns of that God, and to have the same represented on his Coins, which was continued by his Successors.*

(t) He saved his Brother Timophanes's *Life, in the Battle between the* Argives *and* Corinthians; *but took it away when he turn'd* Tyrant: *preferring his Duty to his Country to his Obligations of Blood.*

(u) Aristides, *who was called* the Just, *for his great Integrity. When his Countrymen wou'd have banished him by their Ostracism, where it was a Custom for every Voter to sign the Name of the Person he wou'd have exiled in an Oyster-Shell, a Peasant who could not write desired* Aristides, *the Person to be exiled, to do it for him, who immediately complied, by signing his own Name.*

(w) In the Midst of the Temple, near the Throne of Fame, are placed the greatest Characters of Antiquity, described in their proper Attitudes. Their respective Columns are adorned with Sculptures drawn from the most striking Parts of their Works, to which they have a close Resemblance.

1. High on the *Firſt*, the mighty *Homer* ſhone;
Eternal *Adamant* compos'd his Throne,
Father of Verſe! in holy Fillets dreſt
His ſilver Beard wav'd gently o'er his Breaſt.
Tho' blind, a Boldneſs in his Looks appears,
In Years he ſeem'd, but not impair'd by Years.
The Wars of *Troy* were round the *Pillar* ſeen,
Here fierce *Tydides* wounds the *Cyprian* Queen;
There *Hector* glorious from *Patroclus*'s Fall,
Here dragg'd in *Triumph* round the *Trojan* Wall.
Motion and Life did ev'ry Part inſpire,
Bold was the *Work*, and prov'd the Maſter's Fire;
A ſtrong Expreſſion moſt he ſeem'd t'affect,
And here and there diſclos'd a brave Neglect.

2. A golden *Column* next in Rank appear'd
On which a ſhrine of pureſt Gold was rear'd;
Finiſh'd the Whole, and labour'd ev'ry Part,
With patient Touches of unweary'd *Art*:
The *Mantuan* there in ſober *Triumph* ſate
Compos'd his Poſture, and his Look ſedate;
On *Homer* ſtill he fix'd a rev'rend Eye,
Great, without *Pride*, in modeſt Majeſty.
In living *Sculpture*, on the Sides were ſpread
The *Latian* Wars, and haughty *Turnus* dead;
Elisa ſtretch'd upon the fun'ral *Pyre*,
Æneas bending with his aged Sire:
Troy flam'd in burning Gold, and o'er the Throne,
ARMS AND THE MAN *in golden Cyphers ſhone.*

3. *Four* Swans ſuſtain a *Car* of Silver bright
With Heads advanc'd, and Pinions ſtretch'd for Flight,
Here, like ſome furious Prophet, *Pindar* (*x*) rode,
And ſeem'd to labour with th' inſpiring God.
Acroſs the *Harp* a careleſs Hand he flings,
And boldly ſinks into the ſounding Strings.
The figur'd *Games* of *Greece* the Column grace;
Neptune and *Jove* ſurvey the rapid Race.
The Youth hang o'er their *Chariots* as they run,
The fiery Steeds ſeem ſtarting from the Stone;
The *Champions* in diſtorted Poſtures threat;
And all appear *irregularly* great.

4. Here happy *Horace* tun'd th' *Auſonian* Lyre,
To ſweeter Sounds, and temper'd *Pindar*'s Fire:

Pleas'd

(*x*) *Being ſeated in a Car or Chariot, alludes to the Chariot Races he celebrated in the* Grecian *Games. The Swans are Emblems of Poetry; their ſoaring Poſture alludes to the Activity and Sublimity of* Pindar's Genius. Neptune *preſided over the* Iſthmian *and* Jupiter *over the* Olympian *Games.*

Pleas'd with *Alcens (y)* manly Rage t'infuſe
The ſober Spirit of the *Sapphic* Muſe, *(z)*
The poliſh'd Pillar diff'rent Sculptures grace,
A Work outlaſting *monumental* Braſs, *(a)*
Here ſmiling *Loves* and *Bacchanals* appear,
The *Julian* Star, and great *Auguſtus* here.
The Doves that round the infant Poet ſpread,
Myrtles and Bays hung hov'ring o'er his Head.

5. Here in a *Shrine* that caſt a dazzling Light
Stand fixt in Thought the mighty *Stagyrite*:
His ſacred Head, a radiant *Zodiac* crown'd,
And various Animals his Sides ſurround,
His piercing *Eyes* erect, appear to View
Superior Worlds, and look all Nature through.

6. With equal Rays immortal *Tully* ſhone,
The Roman *Roſtra* deck'd the *Conſul*'s Throne;
Gath'ring his *flowing Robe*, he ſeem'd to ſtand,
In Act to ſpeak, and graceful ſtretch'd his Hand.
Behind *Rome*'s *Genius* waits with civic Crowns,
And the great Father of his Country owns.

Theſe *maſſy* Columns in a Circle riſe
O'er which a pompous *Dome* invades the Skies:
Scarce to the Top I ſtretch'd my aching Sight,
So large it ſpread and ſwell'd to ſuch a Height.
Full in the Midſt proud FAME's imperial *Seat*,
With Jewels *blaz'd magnificently great.*
The vivid Em'ralds there revive the Eye,
The flaming Rubies *ſhew their ſanguine Dye,*
Bright azure Rays from lively Sapphires *ſtream,*
And lucid Amber *caſts a golden Gleam.*
With various colour'd Lights the Pavement ſhone
And all on Fire appear'd the glowing Throne;
The Domes *high Arch reflects the mingled Blaze,*
And forms a Rainbow *of alternate Rays.*
When on the GODDESS *firſt I caſt* my Sight
Scarce ſeem'd her *Statue* of a Cubit's Height,
But ſwelled to larger Size, the more I gaz'd
Till to the *Roof* her tow'ring Form ſhe rais'd,
With her the *Temple* ev'ry Moment grew,
And ample *Vifta*'s, open'd to my View.
Upward the *Columns* ſhoot, the Roof aſcend,
And Arches widen, and long *Iſles* extend.
Such was her Form, as ancient *Bards* have told,
Wings raiſe her Arms and Wings her Feet infold,

A

(y) *Expreſſing the mix'd Character of* Horace's *Odes.*
(z) *Alluding to his Spiritum Graiæ tenuem camanæ.*
(a) *Alluding to his Exegi Monumentum Ære perennius. The Action of the Doves alludes to a Paſſage in the fourth Ode of his third Book.*

A thouſand buſy Tongues the Goddeſs bears,
And thouſand open Eyes, a thouſand liſt'ning Ears.
Beneath in Order rang'd the tuneful *Nine*,
(Her *Virgin* Hand-Maids) ſtill attend the Shrine
With Eyes on FAME for ever fix'd they ſing;
For FAME they raiſe the Voice and tune the String;
With *Time*'s firſt *Birth* began the heav'nly Lays,
And laſt, eternal, thro' the Length of Days.
Around theſe Wonders, as I caſt a Look,
The *Trumpet* ſounded and the *Temple* ſhook,
And all the *Nations* ſummon'd at the Call,
From diff'rent Quarters fill the crouded Hall:
In *various* Tongues promiſcuous Sounds were heard,
In various *Garbs* promiſcuous Throngs appear'd;
Thick as the *Bees* that with the *Spring* renew
Their flow'ry Toil and ſip the fragrant Dew;
When the wing'd *Colonies* firſt tempt the Sky
O'er duſky Fields, and ſhaded Waters fly.
Or ſettling ſeize the *Sweets* the *Bloſſoms* yield,
And a low Murmur runs thro' all the Field.
Millions of ſuppliant Crowds the Shrine attend,
And *all Degrees* before the GODDESS bend;
The *Poor*, the *Rich*, the *Valiant* and the *Sage*,
And boaſting *Youth* and narrative old *Age*,
Their *Pleas* were diff'rent, their Requeſts the ſame,
For *Good* and *Bad*, alike are fond of FAME.
Some ſhe diſgrac'd and ſome with Honours crown'd,
Unlike Succeſſes, equal Merits found.
Thus her blind Siſter, fickle *Fortune*, reigns,
And, undiſcerning, ſcatters Crowns and Chains.
Firſt, at her *Shrine*, the learned World appears,
And to the GODDESS thus preferr'd their Pray'rs.
Long have we ſought t'inſtruct and pleaſe Mankind
With Studies pale, and Midnight *Vigils* blind;
But thank'd by *Few*, rewarded yet by *None*,
We here appear to thy ſuperior Throne;
Oh Wit and Learning the juſt *Prize* beſtow,
For Fame is all that we expect *Below*.
The *Goddeſs* heard, and bade the *Muſes* raiſe
The golden Trumpet of eternal Praiſe:
From Pole to Pole the Winds diffuſe the Sound,
That fills the Circuit of the World around;
Nor all at once, as Thunder breaks the Cloud,
The Notes at firſt were rather ſweet than loud;
By juſt Degrees they ev'ry Moment riſe,
Fill the wide Earth, and gain upon the Skies.
At ev'ry Breath were balmy Odours ſhed,
Which ſtill grew ſweeter as they wider ſpread;
Leſs fragrant Scents th' unfolding Roſe exhales,
Or Spices breathing in *Arabian* Gales.

Next theſe the Good and Juſt, an awful Train,
Thus on their Knees addreſs the ſacred Fane.
Since living Virtue is with Envy curs'd,
And the beſt Men are treated like the worſt,
Do thou, juſt Goddeſs, call our Merits forth,
And give each Deed th' exact intrinſic Worth.
Not with bare *Juſtice* ſhall your Act be crown'd
(Said *Fame*) but high above deſert renown'd:
Let fuller Notes th' applauding World amaze,
And the loud *Clarion* labour in your Praiſe!
This Band diſmiſs'd, behold another Crowd
Prefer'd: the ſame Requeſt, and lowly bow'd,
The conſtant Tenour of whoſe well ſpent Days
No leſs deſerv'd a juſt Return of Praiſe.
But ſtrait the direful *Trump* of Slander ſounds,
Thro' the big *Dome* the doubling Thunder bounds;
Loud as the Burſt of Cannon rends the Skies,
The dire Report thro' ev'ry Region flies.
In ev'ry Ear inceſſant Rumours rung,
And gath'ring Scandal grew on ev'ry Tongue.
From the black Trumpet's ruſty concave broke
Sulphureous Flames and Clouds of rolling Smoke:
The pois'nous Vapour blots the purple Skies,
And withers all before it as it flies.
A Troop came next, who *Crowns* and *Armour* wore,
And proud *Defiance* in their Looks they bore;
For Thee *(they cry'd)* amidſt Alarms and Strife,
We ſailed in *Tempeſt* down the Stream of Life;
For Thee, whole Nations fill'd with Flames and Blood,
And ſwam to *Empire* thro' the purple Flood.
Thoſe *Ills* we dar'd, thy Inſpiration own,
What Virtue ſeem'd, was done for *Thee* alone.
Ambitious *Fools!* (the QUEEN replied and frown'd)
Be all your Acts in dark Oblivion drown'd;
There ſleep forgot, with mighty *Tyrants* gone,
Your *Statues* moulder'd, and your *Names* unknown!
A ſudden Cloud ſtrait ſnatch'd them from my Sight
And each majeſtic *Phantom* ſunk in Night.
Then came the *ſmalleſt Tribe* I yet had ſeen;
Plain was their Dreſs, and modeſt was their Mein;
Great *Idol* of Mankind! we neither claim
The Praiſe of Merit, or aſpire to Fame!
But ſafe in Deſerts from th' *Applauſe* of Men,
Wou'd die unheard of, as we liv'd unſeen.
'Tis all we beg Thee, to conceal from Sight
Thoſe Acts of *Goodneſs*, which themſelves requite.
O let us ſtill the ſecret Joy partake
To follow Virtue ev'n for Virtue's Sake.
And live there Men, who ſlight *immortal* Fame?
Who then with Incenſe ſhall adore our Name?

But

But, Mortals! know, 'tis ſtill our greateſt Pride
To blaze thoſe Virtues, which the Good wou'd hide,
Riſe! Muſes, riſe, add all your tuneful Breath,
Theſe muſt not ſleep in Darkneſs and in Death,
She ſaid: in Air the trembling Muſic floats,
And on the Winds triumphant ſwell the Notes;
So ſoft, tho' high, ſo loud, and yet ſo clear
Ev'n liſt'ning Angels lean'd from Heav'n to hear:
To fartheſt Shores th' *ambroſial* Spirit flies,
Sweet to the World and grateful to the Skies.
Next theſe a *youthful* Train their Vows expreſs'd,
With Feathers crown'd, and gay Embroid'ry dreſs'd:
Hither they cry'd direct your Eyes, and ſee
The Men of *Pleaſure*, *Dreſs*, and *Gallantry*;
Ours is the Place at Banquets, Balls, and Plays,
Sprightly our Nights, polite are all our Days;
Courts we frequent, where 'tis our pleaſing Care
To pay due Viſits and addreſs the Fair:
In Fact, 'tis true, no *Nymph* we cou'd perſwade,
But ſtill in Fancy vanquiſh'd ev'ry Maid;
Of unknown *Ducheſſes* lewd Tales we tell,
Yet, wou'd the World believe us, all were well.
The Joy let others have, and we the Name,
And what we want in Pleaſure grant in *Fame*.
The QUEEN aſſents, the Trumpet rends the Skies,
And at each Blaſt a *Lady*'s Honour dies.
Pleas'd with the ſtrange Succeſs, vaſt Numbers preſs'd
Around the *Shrine*, and made the ſame Requeſt:
What you *(ſhe cry'd)* unlearned, in Arts to pleaſe,
Slaves to yourſelves, and ev'n fatigu'd with Eaſe,
Who loſe a Length of undeſerving Days,
Wou'd you uſurp the *Lover*'s dear bought Praiſe?
To juſt *Contempt*, ye vain *Pretenders*, fall,
The People's Fable, and the Scorn of all.
Strait the *black Clarion* ſends a horrid Sound,
Loud *Laughs* burſt out, and bitter *Scoffs* fly round;
Whiſpers are heard, with *Taunts* reviling loud,
And ſcornful *Hiſſes* run thro' all the Crowd.
Laſt, Thoſe who boaſt of mighty *Miſchiefs* done,
Enſlave their Country, or *uſurp a Throne*;
Or who their Glory's dire Foundation lay'd,
On *Sovereigns* Ruin, or on Friends betray'd;
Calm thinking *Villains*, whom no Faith cou'd fix,
Of crooked Counſels, and dark Politics;
Of theſe a *gloomy Tribe* ſurround the *Throne*,
And beg to make th' immortal *Treaſons* known.
The *Trumpet* roars, long flaky Flames expire,
With *Sparks* that ſeem to ſet the World on Fire.
At the dread ſound *pale Mortals* ſtood aghaſt,
And ſtartled Nature trembled with the Blaſt!

This having heard and ſeen, ſome Pow'r unknown,
Strait chang'd the *Scene*, and ſnatch'd me from the *Throne*.

The Temple of Fame *here changes to the Temple of* Rumour (a Subject of leſs *Dignity* and *Requeſt*) *wherein Mr.* Pope *follows* Chaucer *almoſt intirely. His Hint of the foregoing Piece was taken from* Chaucer's Houſe of Fame, *whoſe Deſign or* Plan *Mr.* Pope *has greatly altered and improved, ſo as to render the elegant Deſcriptions and moſt of the particular* Thoughts *and ſtriking* Images *his own. If the Reader would compare this Account of* Fame's *Temple, with* Chaucer's *Houſe of* Fame, *he muſt begin with his third Book of Fame, there being Nothing contained materially relative before in* Chaucer.

NEW ÆNIGMAS.

I. ÆNIGMA 150. *By Mr.* Thomas Sadler, *of* New-Hall, *near* Wrenbury, Cheſhire.

STrange Things I've heard, dear LADIES, you muſt know
Were ſaid of me ſome hundred Years ago;
And ſtranger ſtill, if I the Truth may tell,
That ſeem to *rival* the fam'd *Sydrophel*.
Strange *Forms* and *Sizes*, I am known to ape,
And diff'rent Things, in Magnitude and Shape;
I change my Colours, vary ev'ry Stain
From White to Black, and Black to White again!
More Wonders yet—I in a Moment ſend
Strange Flights of Fancy to each hum'rous Friend.
Tho' *Woodward*, in his *Pantomime*, may ſtare,
And think he is my *Rival* to a Hair;
His Twiſting, Twining, his Grimace, can't ſhew
Such great *Exploits* as I am known to do:
Such hum'rous *Figures* of me have been ſeen,
Array'd in *Red*, *Pink*, *Yellow*, *Blue* or *Green*.
With *Monſters* ſtrange I have been known to deal,
And ſhewn the *Dragon* with a fiery Tail;
As Fancy dictates, whiſk myſelf around,
Sometimes take Wing and fly above the Ground.
Mere Wonders ſtill, I indicate, preſage,
Turn *Andrew*, tumble, roll about the Stage;
Now here, now there, behold how briſk I paſs,
From Cox the Shepherd to the Country LASS.
It has been ſaid, I've *poz'd* the greateſt *Wit*,
Where e'er I go, or Country Man, or Cit;
And give to each ſuch *emblematic* Rules,
Few find my equal in the public Schools.
When *ſerious* grown, I'm planning ſomething ſtrange,
And few *Geometers* ſuch Figures range:
Mean while behold how *Strephon* and his *Fair*,
With Mouth half-cock'd, will *ſimper*, *grin*, and *ſtare*.

Yet

Yet one Hint more, *fair Ladies*, I've been ſeen,
In *Roger*'s Mouth, when dancing on the Green;
Who pull'd me out, and thump'd me o'er and o'er;
I made my Exit, and appear'd no more.

II. ÆNIGMA 151. *By Mr.* Thomas Sadler.

BEHOLD old Age with me appear,
With wrinkled Cheeks and flaxen Hair,
Or ſee the Youth deſcend the *Brow*,
And thro' the Vale with me will go.
Within the teeming Field I bear,
In *Servitude* an equal Share.
And am the poor Man's only Friend,
To wait on him I condeſcend;
There's *Strephon*, *Thomas*, *Ralph*, and *Will*,
With *Humphry*, *Simon*, *Harry*, *Gill*—
All Shoulder Height will march along
With me, and ſing their rural Song.
—Thus I attend the Country Swain,
When Fears nor Doubts diſturb his Brain.
Ulyſſes, as the Story goes,
Ranſack'd the *Trojans* as his Foes,
And by his *Wooden*-Horſe and Craft,
O'ercame 'em all—ſo I come aft.
Nay *Sampſon* too, with jaw Bone ſlain,
He ſcatter'd Thouſands o'er the Plain;
Millions or Billions I may ſay
I've ſcatter'd and ſtill clear my Way;
Propitious Fair, record my Name
In your *Palladium*-Book of Fame.

III. ÆNIGMA 152. *By Mr.* Thomas Sadler.

From Man and Trees, I claim my Birth,
And from the Bowels of the Earth;
By *Vulcan*'s Art I'm form'd complete,
And on my Maſter's *Will* I wait.
My Shape to tell, ye lovely Fair,
Is ſomething odd, as will appear.
For, on my Belly, you muſt know,
I'm oftentimes conſtrained to go.
—A Mouth I have, and Tongue likewiſe,
And Ears of various Form and Size,
Some ſay I've Ribs, but ne'er a Skin,
In which to hold my Parts within.
Hump back'd I am, my Shoulders ſtrong,
Two Arms I have both ſtout and long.
And like true Friends, ye Fair muſt know,
I oft ſhake Hands with *John* and *Joe*!
And by a *Twiſt* it muſt be ſaid,
My Tail oft times runs round my Head.
Am tug'd along by *Dick* and *Doll*,
Copartners they, who take a Pull,

At *Teraton* Wakes, ſays *Ralph* and *Sam*,
A famous *Ropemaker* I am.
Tradition ſtrange with them prevails,
Like Mother *Bunch*, or *Shipton*'s Tales!
With me ſays *Ambroſe*, *James* and *Will*,
They can ſurpaſs the *Devil*'s Skill!
'Tis true my Uſe and Value's great
In ev'ry Realm, and ev'ry State.
In *Africa*, or *Aſia*,
In *Europe*, or *America*.
So Fame reports throughout this Iſle,
Each *Briton* on me deigns to ſmile,
Yet one Hint more I'll give to you,
And then, ye Fair, I'll bid *adieu!*
At *Roger*'s Door, within this Land
Erected on a *Pole* I ſtand.

IV. An ÆNIGMATICAL TALE 153. *By Sir* B. C. *Knight.*

AS DICK was delving near a Grove,
Thinking, perhaps, of *Kate* his Love,
He ſaw me *Whiſk* along the Way,
Which made him caper, dance, and play;
He flung his Spade upon the Ground,
Reſolv'd with me to take around.
He follow'd me, would not give out,
But ſtill wou'd take the other Bout,
However, I kept him in play
For many Hours (near half a Day)
Sometimes did run, and ſometimes fly,
Or move aloft, beneath the Sky;
But *Dick*, at laſt, tho' out of Breath,
Seiz'd me a *Priſoner* on the Earth;
Then brought me to the Country *Squire*,
Whoſe Can of Beer did *Dick* inſpire;
And pleas'd ſo well th' unpoliſh'd Swain,
He reel'd and whiſtled Home again;
While I a *Captive's* Fate muſt Share,
As *Priſoners* in a Caſtle fare.
But I, in Time, grew more alert,
Not *Harlequin* was ſo expert,
A fine *Muſician* ſoon became,
And *Muſic* was my fav'rite Theme.
Tho' *Handel's* Notes were all ſo fine,
Yet ſome of them I've learn'd to chime;
And if the Truth I now may ſay
My Head turns round whene'er I play,
Come Brother Fidlers, Pipers, rare,
Now to the World my Name declare.

V. ÆNIGMA 154. *By Mr.* Thomas Sadler.

IN ADAM's Days I ne'er was known,
But now am very public grown;

In

In City, Town, and Corporation,
The Cauſe of Joy, and great Vexation.
To Man indeed I'm known to raiſe
A Complication of Diſeaſe;
Yet he to me will poſt away,
Tho' Nature ſhews a ſure Decay.
Sir John will ſwear he likes me well
And ſo does honeſt country *Nell*;
But ſee how ſome will lie and joke,
And *Cob* * the *Baron* Lord of *Soak*.
His blund'ring *Tales* tell o'er and o'er,
And then lies ſprawling on the Floor;
Maſter of ſuch a Tribe they ſay
I am, who me their Tribute pay.
To make the Riddle yet more ſtrange,
I am a *Male*, dwell near th' Exchange:
But at the Ship, near *Temple-Bar*,
I bear a famous Character.
Yet to each Sex I claim a right,
And ſometimes am *Hermaphrodite*
From which you will my Name diſcern
Like *Triſmegiſtus*, live and learn.

VI. ÆNIGMA 155. *By Mr.* J. Scott, *of* Cawtherne.

I.

AS *Roger* and his Wife in *May*
Were fauntering the Groves along,
They chearful minded then and gay,
I entertain'd them with a Song.

II.

Quoth Hodge thou heſitating Blade
Thy Muſic to us make more plain;
But diſregarding what he ſaid,
I ſung the ſame to them again.

III.

Indeed ſaid *Nell*, on my Salvation,
The *Harmony* is ſmooth and even;
Be but contented in your Station,
And you'll be ſure to go to Heaven.

IV.

Poor *Roger* puzzl'd and in Doubt,
At ſuch a doleful tuneful *Ditty*;
But you *anon* will find me out
Now I have told what was ſo pretty.

VII. ÆNIGMA 156. *By 'Squire* Wagſtaff.

SWIFT and erratic I can run
In Froſt or Rain, or *Summer's* Sun;
Am truly of *amphibious* Nature,
And found on Land, and in the Water;

And

* In a Pamphlet, intitled *Don Coblaro*, or Mock *Baron*.

And often, too, you may with Eaſe,
Deſcry me *perching* upon Trees;
Some ſay I'm *chaſte*, and ſome ſay *wild*;
For oftentimes I prove with Child
But *Shame* to tell, a Sight unmeet,
I am deliver'd in the *Street*:
Oft *Twins* I bear, and ſometimes more;
And ſometimes pregnant am with four;
The Number none can truly fix,
For I am known to bring forth *Six*.
Oh! cruel Age, degenerate Times,
Tho' charg'd with no *enormous* Crimes,
(Except a little falſe *Oeconom*;
And as for *Knaves* I cannot ſhun 'em)
Without a *Judge*, or *Jury*, I
Am gibbeted, and hung on high.

VIII. ÆNIGMA 157. *By Mr.* J. Tarratt.

ONCE did I grace fair *Sylvia*'s growing Train,
Till *Ruſticus* reduc'd me on the Plain;
Not yet content, I'm cut and mangl'd ſore,
My Limbs are ſhorten'd and my Garments tore;
This to compenſate, I'm to *Court* conſign'd,
There to be poliſh'd, portion'd and refin'd;
In *Latin* Diction here I'm taught to ſpeak,
In Numbers ſkill'd, but ne'er attain to *Greek*.
Like *Eve*; firſt Partner, plac'd by *Adam*'s Side,
So am I mated with a faithful Bride.
But ſhort this Union, cruel, cruel Fate!
I'm doom'd to Travel;—ſhe to *Priſon* ſtrait;
More *Hardſhips* ſtill, oh pity the *Exile*,
At my Return we periſh in one Pile.

IX. ÆNIGMA 158. *By Mr.* Thomas Sadler.

ÆNIGMATISTS, ingenious Wits attend,
Ye Sons of *Science*, and *Palladium*'s Friend;
Who have with Eaſe the *deepeſt* Things diſcloſ'd,
Thoſe Things which might an *Oedipus* have poſ'd.
Expoſe my *Name*, let it recorded be
In *Pallas*' Temple for the *Fair* to ſee.
The *Ladies* ſeldom court my friendly Aid;
But I aſſiſt the *Cook*, and Chamber Maid:
Hard is my Caſe, they thump me o'er and o'er,
(Th' *old Wife* too) until their Arms are ſore.
Known to the *Quack*, whoſe boaſted Skill I tell,
And *Merryman* his Tumbler knows me well.
With *Thomas* and his much beloved Bride,
In humble *Cottage* I ſometimes abide.
My Shape and Frame with various Curves abound;
Sometimes Cylyndric; for I'm moſtly round.

Emblem

Emblem of *Diſcord*, often heard to jar;
Sometimes am ſilent; ſometimes heard from far;
In Peace remain — declare a civil War.

X. ÆNIGMA 159. *By Mr.* John Clark, *of* Lincoln.

I was, I am, and ſhall *for ever* be,
In *Fact* the ſame to all Eternity;
Yet *Non-exiſtence* I may greatly claim:
To all the World, fair *Ladies*, tell my Name.

XI. ÆNIGMA 160. *By the ſame* Correſpondent.

1. DEAR *Ladies*, would you know my Name,
It is of ſuch an *odious* Nature,
I cannot tell it without Shame,
In Truth I am ſo ſtrange a Creature!
2. I freeze the *Heart* of ſome alive
With my Embrace, and others kill;
With many I too often thrive,
Who act according to my Will.
3. Like ſubtle *Poiſon*, once I ſtole,
Into a bold *Virago*'s Breaſt;
Who lov'd me *dearly* as her Soul,
Nor would without me be at Reſt.
4. Within the *Houſes* of the *Great*
How often have I *lain* conceal'd!
Yet never dwell with honeſt *Kate*,
Nor dare I meet her in the Field.
5. *Minerva* (ſo the *Poets* feign)
Sprung forth out of a royal Head;
I take my Being from the Brain,
From whence *tremendous* Schemes are laid.

*** *Whoever ſends the beſt Anſwer to the following Ænigma before* March 1, 1765, *has a Chance by Lot for* 4 *and* 2 Palladiums; *of* 2*l. each.*

PRIZE-ÆNIGMA. *By Mr.* Thomas Sadler, *of* Newhall, *near* Wrenbury, Cheſhire.

COME tell my Name, *Ladies*, and let it appear
Within the *Palladium of Fame* for next Year;
I traverſe about many Countries round,
In *England*, and *Scotland*, and *Ireland* am found;
In *Holland*, ſometimes at the *Hague* I appear,
Am well known to *Dutchmen* — DON BEN and JOHN QUEER.
To a *whimſical* Tribe I belong, you muſt know,
Serve for *Paſtime* and *Sport* — like *Coxcombs* all a-Row!
I can play the *Buffoon*, like a *Baboon* in Shape,
With my Mouth all *awry*, and can *Emerſon* ape;
The *Palladium* Author can mock for a while,
Deny the *plain* Truth — in the right Hand-bill Stile.
Aſſume like a PEDANT, pretend to excel —
Claim the Arts not my *own*; and when DONE cannot ſpell,

Yet th' *Oddneſs* about me — in which I appear,
Will move you to *Laughter*, when moſt I look *queer*.
The *Coquet* I mimic, the Coxcomb, and *Beau*,
In *Buckram* cas'd up — as I oftentimes go.
I ride in my Coach, like a Lady ſo fine,
And give myſelf Airs — when in Public I dine.
Though *Ralph* he will tell you, to whom you appeal,
My *Equipage is* but a Coach with *one* Wheel;
In which he *degrades* me — What can he do more?
Long Journeys I take in a *Coach* that has *four*.
My *Aſpect* when varied, the Truth I may ſay,
I oftentimes look like fair *Flora* in *May*:
At other Times halt on a *Staff*, or a *Crutch*,
Like old *Par* of *Salop*, and *wrinkled* as much.
In my *brighteſt* Appearance, believe me, ye *Fair*,
My Grandeur's exalted as high as *Lord Mayor*.
Attendants I've *many*, who near me abide,
And I've got a *Footman* to run by my Side.
My *darkeſt* Appearance will make you afraid,
I'm as *black* as a *Collier*, with *Horns on my Head*;
Much given to quarrel — a *Wrangler* profound;
And ſometimes beat Watchmen and Conſtables round:
For ſuch Miſbehaviour the *Round-houſe* I get,
And there I am *ſpeechleſs*, and *quite out of Debt*.
When releas'd from Confinement I ſhake a looſe Leg,
And trip o'er the Green with *Joan*, *Bridget*, and *Peg*;
In my Rambles through *Cheſhire*, at *Nantwich* I'm ſeen,
Among all the Ringers — *Jones*. *Merrick*, and *Green*:
In *London* I join the *diſtributing Pack*,*
From *Bideford Ben* down to *Exeter Jack*.

* *Read the public Papers* (Ledger, &c.) *from* March 29 *to* April 7, 1764, *concerning Hand-bill Diſtributers, like Diſtributers of* Fool's-Caps: Qui capit ille facit.

OBSERVATIONS *on* ENIGMAS, *and the preſent* LADIES DIARY.

ENIGMAS ſhould not be compoſed on *Subjects* little known, or remote in Nature, or not familiar, nor yet on *Modes of Subſtances*, nor on mean or indecent Subjects. It would be abſurd to compoſe an *Enigma* on the 5th *Satellite* of *Saturn*, *Saturn*'s *Ring*, the *Head* or *Brain* of a *Fly*, *Clippings* of human Nails, *&c.* as it would be improper to compoſe *Enigmas* on *Pain*, *Grief*, *Joy*, *Fidelity*, *Integrity*, *Attraction*, *&c.* becauſe the former Subjects furniſh unfit and improper Alluſions to hide them, and give only ſuch *Ideas* as are little underſtood; and the laſt *Subjects*, or *Modes of Beings*, afford but *confuſed*, *unſettled*, and *unlimited*, complex *Ideas*. Quaint, familiar, or ſtriking Subjects of *Subſtances*, (omitting their *Modes*,) furniſhing

furniſhing a Variety of ſtriking Alluſions, are fitteſt for Ænigmas.

If you compare the *Ideas* and *Alluſions* of ſome ill-choſen and as ill-compoſed *Ænigmas*, in ſome of the late *Ladies Diaries*, and in ſome of our *Palladiums*, with their *Subjects*, you will find a very aukward or ill Agreement, and ſometimes an *Incoherence*.

And here it may not be amiſs to rectify a *vulgar Error* fallaciouſly propagated for Bye-ends, by *certain Perſons*, (ſince the Year 1754, incluſive,) "Of *the* Palladium *Author having unjuſtly taken* "*the* Diary *Correſpondents* beſt Things *to inſert in the* Palladium, "*during his Compilation of the* Ladies Diary (from 1744 to 1753 "incluſive) *for his late worthy Friend, Mrs.* Leighton, *the Widow* "*Proprietor.*" The contrary to which Aſſertion hence appears. Better *Ænigmas* and *Pieces of Poetry* are inſerted in the *Ladies Diary* by the *Palladium* Author than are inſerted ſince his Time of compiling it; who made and procured *Ænigmas* on Purpoſe for that Work in the beſt *Manner*, beſides altering others for *Advantage* which were ſent. And the Sale of the *Ladies Diary*, during the *Palladium* Author's Time of compiling it, encreaſed to upwards of 22 Thouſand, now ſunk to 12 Thouſand, annually ſold, *evinces* the Difference of compiling that Work; and alſo evinces, that aukward and difficult *mathematical* Queſtions, of little Uſe and Invention, and *low Subjects*, (void of Taſte and Humour, and even of common Senſe and Spelling,) are improper *Entertainments* for *polite, penetrating, ingenious*, and *brilliant* LADIES; diſgraced by a *clumſey Wood-cut* Figure of a *Lady* on the *Diary Frontiſpiece*, by the Skill and Abilities of the *Contrivers*; being an Affront to the dignified and ſacred Perſon of MAJESTY it is *meanly* deſigned to repreſent. Some of which Diaries, ſince the *Palladium* Author's Time of compiling them, have been printed on no better than *Ballad Paper*, whilſt the preſent *abſurd Conductors* pretend, that the ſaid Diary was murdered by the *Palladium Author*, who offered to raiſe its Reputation. *See farther on.*

The Ladies Diary, *once well known to* Fame,
Now caſts Diſhonour on the Lady's Name!

The QUERIST.

NEW QUERIES.

I. QUERE 160. *By Mrs.* Ann Abby.

WHEN *Cambyſes*, the *Perſian* Emperor, plundered the grand City of *Thebes*, and robbed all the Temples thereof, amongſt the Reſt of the Spoils he carried off that celebrated Circle of Gold, which ſurrounded the Tomb of King *Oxymandras*, being 365 Cubits in Circumference; on which was repreſented the *Conſtellations* in the Heavens. *Required* the Contents thereof in *Engliſh* Feet and Inches; and alſo the *Value* in Pounds *Sterling*; ſuppoſing the Breadth of it was in true Proportion to the Circumference.

II. QUERE 161. *By Mrs.* A. Abby.

A famous *Hiſtorian* ſays of *Alexander the Great*, that after he had drank Wine enough to have diſpatched an ordinary Man, he emptied *Herculs*'s Cup, which held 6 Bottles; this threw him into a high *Fever*, of which he died, (ſerving for a *Memento* to all the Sons of Intemperance.) *How much* of our *Engliſh Wine Meaſure* did this *Cup* contain?

III. QUERE 162. *By Mr.* J. Lyon, *of* Margate.

FROM whence derived the Cuſtom of putting up *Laurel*, *Box*, *Holly*, or *Ivy*, in Churches at *Chriſtmas*; and what is the Signification thereof?

IV. QUERE 163. *By the ſame Correſpondent.*

WHERE was *Ethelbert*, the firſt King of *Kent*, buried?

V. QUERE 164. *By the Same.*

WHY does a *Glaſs Bottle* break when the Water in it is *frozen*, ſooner than at another Time?

VI. QUERE 165. *By the Same.*

REQUIRED the Manner or Cauſe whereby freezing, or the congealing of Water is performed? Whether by the *ſame Cauſe* that Metals become *ſolid* and *fluid?*

VII. QUERE 166. *By the Same.*

WHAT is Sound?

VIII. QUERE 167. *By the Same.*

WHETHER *Bailey*, *Dyche*, *Johnſon*, *&c.* have given a true Explanation of the *Dog-Days?*

IX. QUERE 168. *By* Philoſophicus.

WHETHER all hard Subſtances upon Earth would not be reduced to a Fluid Subſtance by a ſufficient and conſtant Degree of Heat; ſince we find Water is condenſed to Ice by Cold, and rendered a Fluid again by a ſufficient and conſtant Degree of Heat? And whether the Sun's Body is not wholly a Fluid Subſtance, and that all hard Subſtances of the ſolar Syſtem falling therein are not reduced to a conſtant Fluid?

X. QUERE 169. *By the* Palladium-Author.

WHAT are the ſeveral Proportions of the Degrees of Heat in the planetary Bodies of our *ſolar Syſtem*, at the Times of their leaſt or greateſt Diſtances from the Sun?

*** *Whoever anſwers the foll.wing Quere before* March *next, has a Chance by Lot for* 4, 3, *and* 2 Palladiums of Fame.

PRIZE-QUERE. *By Mr.* James Ferguſon, *addreſſed to the Rev. Mr.* J. Kennedy.

SUPPOSE a *Clock* has three Hands on its *Dial Plate*, one of which goes round in 7 Days, another in 29 Days, 12 Hours, 44 Minutes, 1 Second, 45 Thirds, and the Third in 365 Days, 5 Hours, 49 Minutes. — If all theſe Hands are ſet together, at any given *Point* of the Dial-Plate, QUERE, How many *Years*, *Months*, *Days*, *Hours*, *Minutes*, *Seconds*, and *Thirds*, of Time, muſt revolve, before all the Hands can meet together again at the ſame Point?—*The Meaning of which important* QUERE *by the ingenious Propoſer*

Propoſer is, If a New Moon happens at any given Time, viz. *in a given* Month, *and* Day *of the* Month, *at a given* Hour *and* Minute, *and on a given* Week-day, how long *will it be before a* New Moon *happens again, at the ſame given* Time, viz. Month, Day, Hour, &c. *on the ſame given Week-day, according to the given mean or equal Motion?*

N. B. We deſire the Propoſer will favour us with his own Solution, *if he has one*, to compare with the other Solutions to be ſent us, that he may be a *worthy Competitor* for the *Prize!*

NEW PARADOXES.

I. *Geographical* PARADOX. *By Mr.* I. Tarrat, *of* Epſom.

THERE is a certain Place upon this Globe where the Inhabitants have two *Summers* and one *Winter*, two *Springs* and one *Autumn*, within the Space of 365 Days.

II. *Fools-Cap* PARADOX. *By* Jack Catchum, *Eſq.*

IN *fourteen* Circles Centers place
Juſt *thirteen* Authors †, in Diſgrace;
Yet that they all ſhall ſo agree,
As each be in Periphery:
One in each Center fix'd — nor more —
Six Rows of three, and ſix of four.
Strange Things we find by Rows are DONE,
Which all the Wiſe and Prudent ſhun.
Suppoſe they thus were doom'd to *dangle*,
What is the *Side* ‡ of each *Triangle?*

† *Or Diſtributors of Fool's-Cap Hand-bills.*

‡ *The greateſt Diſtance of any two of theſe Authors, at a* Maximum, = 12 Yards.

NEW QUESTIONS.

I. QUESTION 297. *By Mr.* Thomas Sadler, *of* Newhall, *near* Wrenbury, Cheſhire.

NEAR *Nantwich* Town now lives a *heav'nly* Fair,
Thither, ye Sons of *Earth*, in Haſte repair;
There learn the Force of *Wit* and *Beauty*'s Charms,
And *Virtue*, hourly guarding her from Harms.
There learn t' admire *ſuperior* Reaſon, Senſe,
The Pow'r of *Wiſdom*, and of *Eloquence!*
All you can wiſh, in this bright *Maid* combine,
To make her lovely and appear divine!
Ye mighty Pow'rs, O grant me this Requeſt,
In Hymen's *Bands with her for ever bleſt!*
Her Name, ye *Artiſts*, you by Skill may find,
From the *Equations* which are here ſubjoin'd.

Given,

Given $\left\{\begin{array}{l} x+y+yz=78 \\ xy+y^2+z^2=324 \\ y^2z+xz^2=912 \end{array}\right\}$ This amiable *Lady*'s Name consists of 4 Letters in the *Alphabet*; the Value of the firſt Letter of her Name is repreſented by x, of the ſecond and third by y, and of the 4th by z, according to the Number of each Letter's Place in the *Alphabet*.

II. Question 298. *By Mr.* Iſaac Tarrat, *of* Epſom.

A ſpreading *Oak* adorns th' enamell'd *Mead*,
Where bleating Flocks retreat for cooling Shade;
The winged *Choir* their warbling *Anthems* ſing,
While the adjacent Groves with *Echos* ring.
With niceſt Skill I *Obſervation* made,
To find the Tree's true *Height*, and Length of *Shade*:
The *Summit*'s Diſtance, *plus* Ten Yards from me,
Equal the Length of *Shade* and Height of *Tree*.
The *Summit*'s Diſtance, *leſs* the Height, explain'd
The Shadow's Length — the Double what remain'd.
From hence the Tree's true Height you may unfold,
And Shadow's Length from what above is told;
I at th' Extreme then of the Shadow ſtood,
By which my Obſervations I made good.

III. Question 299. *By* Epſcmius Amicus.

GIVEN $\left\{\begin{array}{l} \sqrt[3]{w+x+y+z} = 12.03 = a \\ wx+yz = 15480 = b \\ wz+x = 10242 = c \\ \sqrt[4]{wx+y^2z} = 134.164 = d. \end{array}\right.$

w repreſents the *Year*.
x the *Month*.
y the Day of the *Month*.
z the Hour P. M. when the above *Perſon* was born.
Required his *Age*, and the *Time of his Birth*.

IV. Question 300. *By Mr.* Thomas Sadler.

GIVEN $\left\{\begin{array}{l} x^2y+y^2x=a=100 \\ x^3y^2+x^2y^3=b=1000 \end{array}\right\}$ Required the Value of x and y by a *quadratic* Equation.

V. Question 301. *By the Same.*

REQUIRED the greateſt *Ellipſis* that can be inſcribed in a Cone, whoſe *ſlant* Side is 40 *Inches*, and Superficies a *Minimum*: With the *Inveſtigation*.

VI. Question 302. *By the Same.*

FOUR Merchants fit out a Ship for the *Eaſt Indies*, and the Profits accruing from the Voyage amounted to 4000 *l.* whereof A was to have $\frac{1}{3}$, B $\frac{1}{4}$, C $\frac{1}{5}$, and D $\frac{1}{6}$. When the Merchants received theſe Shares, juſt 200 *l.* remained. Required a *general* and *eaſy Method* of anſwering all ſuch *Queſtions*, for the Uſe of the Owners of Ships, and of Perſons concerned in *Partnerſhip*.

VII.

VII. QUESTION 303. *By Mr.* Edward Johnſon, *Mathematical Maſter at* Hull.

Caſes.

GIVEN $\left.\begin{matrix}1\\2\\3\\4\end{matrix}\right\{\begin{matrix}x^2+y^2=z^2\\x^2-y^2=v^2\\x^3+y^3=w^2\\x^3-y^3=z^2\end{matrix}\}$ Required 4 Values of x, and as many of y, all in whole Numbers, ſo as to anſwer the 4 Conditions of the Queſtion, with a *general Theorem* for each particular *Caſe*.

VIII. QUESTION 304. *By the ſame Correſpondent.*

IN the *Equation* $ax^2+bx=d$, when $a=b+d$; then $x=\frac{d}{a}$. Required the *Demonſtration*.

IX. QUESTION 305. *By the Same.*

SUPPOSE a Ball be fired out of a Cannon perpendicular to the *Horizon* (in Lat. 54°) with a Velocity of 250 Yards *per Second*, to what Height will it aſcend, and how long will it continue in Motion, and what will its Amplitude be, occaſioned by the Earth's Rotation about its *Axis*?

X. QUESTION 306. *By the Same.*

GIVEN the *Radius* of a circular Quadrant = 25, to find the Sides of a right-angled Triangle circumſcribing the ſame, the *Area* of the Triangle being *double* that of the *Quadrant*.

XI. QUESTION 307. *By the Same.*

GIVEN the *Perimeter* of a right-angled Triangle = 34 Chains, and a right Line drawn parallel to the *Hypothenuſe*, dividing the Triangle into two equal Parts = 11 Chains, to find the Sides and *Area*.

XII. QUESTION 308. *By Mr.* Thomas Walker, *of* Stanton-Bury, Bucks.

REQUIRED the moſt eaſy and practical Rule or Method for finding the ſuperficial Content of a *Cylinder*: Suppoſe of one whoſe Diameter = 20, and Length 60 Inches.

XIII. QUESTION 309. *By Mr.* J. Lyon, *of* Margate.

REQUIRED the Time of *Sirius*'s Riſing and Setting during the Dog-Days.

XIV. QUESTION 310. *By Mr.* William Penn, *of* Chalfont.

WHAT will be the Axis of a Globe, when the *Solidity* is in Proportion to the Superficies as 2 to 12?

XV. QUESTION 311. *By Mr.* Iſaac Tarrat.

A Surveyor having meaſured a triangular *Piece* of Land, found the Sum of the three Sides to be 25 Chains, 50 Links, *(per Gunter)*, the Perpendicular let fall upon the Baſe to be 5 Chains, 80 Links, and the *Ratio* of the two Segments to be as 3 to 5. *Required* the *Sides* and *Area* of that Field.

XVI.

XVI. QUESTION 312. *By Mr.* T. Edwards, *of* Cheam, *in* Surry.

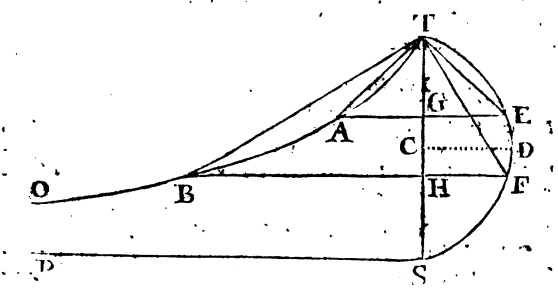
REQUIRED from *below* † what Money was paid By a *Mercer* for Silk? — What it ſold for in Trade?

† $x\sqrt{y} + y = 2725.25l.$

$xy^2 + x^2y - \sqrt{xy} = 7711283.8774.$

x = Sum he paid for the Silk,
y = his Gain *per Ct.* it ſold for.

XVII. QUESTION 313. *By Mr.* Edward Johnſon, *of* Hull.



LET TDS be a Semi-Ellipſis, whoſe Tranſverſe Diameter TS = 30, and Semi-Conjugate CD = 20. If from any Point E, in the Periphery, a right Line EA be drawn perpendicular to TS, and another right Line TA perpendicular to the Chord TE, the Point A will be in the Curve TABO: Alſo TB is perpendicular to the Chord TF, FB perp. to TS, and B another Point in the Curve. From whence it is required to find the Area of the finite Space TABOPST.

N. B. *This Queſtion admits of an elegant Solution,*

XVIII. QUESTION 314. *By Mr.* Thomas Sadler, *of* Cheſhire.

AN old *Woman*, of above *Threeſcore and Ten*,
Has buried *four* Huſbands, and married again;
To MARTIN the *Mugman* — a Bagpiper rare!
And none can with him for his Muſic compare.
The *Muſic* he play'd — pleas'd th' *old Woman* much,
Till ſhe hopp'd and ſhe caper'd about without *Crutch!*
Though wrinkled and wither'd — no Tooth in her Head —
Yet *Money* ſhe had — and ſhe got married.
To his Bagpipe ſhe mov'd, with one Foot in the Grave,
And all her Delight was a *Huſband* to have!
The *Sum* of both Ages one Hundred Years are;
Makes the LEAST †, when his *cub'd*, *adds* to nine Times her's *ſquare*.

† A *Minimum*.

XIX.

XIX. QUESTION 315. *By Mr.* Thomas Marſhall, *of* Blanchland, Palladium *Champion.*

FROM *three* Equations † here, by Name,
One *Fool's Cap Author*, known to *Fame*;
And from *three* more ‡ diſcloſe another
Diſtributer *, and confed'rate *Brother.*

* Of Hand-bills againſt the *Palladium*, its Author, and the Correſpondents.

† $x^2 + yx = 438$
$y^2 + xz = 38468$
$z^2 + yz = 28617$

‡ $x^3 + yz = 5807$
$y^3 + xz = 3101$
$z^3 + yz = 9499.$

N. B. The Values of the Letters in the *above Equations* denote the Letters Places in the *Alphabet*, belonging to each *Name*; wherein *x*, *y*, and *z*, denote, *reſpectively*, the 1ſt, 2d, and 3d Letter.

XX. QUESTION 316. *By the* PALLADIUM-AUTHOR.

TO find the Dimenſions of ſeveral right-angled Triangles, ſuch that the *Area* of each taken from the *Sum* of the three Sides (each being a *rational* Number) ſhall be a *ſquare* Number; and to determine that Triangle which is a *Maximum.*

XXI. QUESTION 317. *By* Analyticus.

REQUIRED to find ſeveral Pairs of *rational*, or whole Numbers, ſuch that half the *Rectangle* of any two being ſubtracted from their *Sum*, the Remainder ſhall be a *ſquare* Number; and the *Sum* of their Squares ſhall be a *ſquare* Number. To give the *Inveſtigation.* Or to find the *Perpendicular* and *Baſe* of ſuch rectangled Triangles, in *rational* Numbers, with the *Hypothenuſe* a *rational* Number, that the Area being taken from the Sum of each *Perpendicular* and *Baſe*, ſhall leave a *ſquare* Number.

*** *Whoever truly anſwers the following Queſtion by the* 1ſt *of* March *next, has a Chance by Competition or Lot to win the* Prize Palladiums of Fame, *equivalent in Value to the former* Prize Palladiums.

PRIZE-QUESTION. *By the* PALLADIUM-AUTHOR.

REQUIRED the Date of the Year current, before or ſince *Chriſt*, the *Month*, *Day*, *Hour*, *&c.* when an ECLIPSE of the SUN happened the *neareſt* of all others, ſince Creation, to the *vernal Equinox:* And the Time alſo, before or ſince *Chriſt*, when an ECLIPSE of the MOON happened the *neareſt* of all others to the *autumnal Equinox.* According to the Tables in the *Royal Aſtronomer and Navigator.*

☞ *Mr. J. Scott*, of *Cawthorne*, propoſed two Queſtions.

ANSWERS *to the* ÆNIGMAS *in the* PALLADIUM, 1764.

I. A COURTESY.
II. LOVE.
III. An HOUR GLASS.
IV. DARKNESS.
V. MAN.
VI. A LANTHORN.
VII. The ALPHABET.
VIII. TIME.
IX. DIRT.
X. SMOKE.
XI. A HORN.
XII. A LANCET.
XIII. A SHEPHERD'S CROOK.
Prize. HARLEQUIN.

All the ÆNIGMAS *anſwered by Mr.* Sadler, *of* Newhall, Cheſhire.

BEHOLD old TIME, with *Scythe* and fabled GLASS, 8. 3.
Point out to *Man* how fleeting Minutes paſs;
Whilſt he purſuing empty Noiſe and Strife,
In ſenſual Pleaſures wanders out his Life.
Luxuriant Fields and rural Bowers may pleaſe
The *Ruſtic*'s Thought, tranſport him diff'rent Ways,
Unknown to Joys of *Pallas*'s Retreat,
He wanders wild, nor ſeeks the *Temple* Gate.
Let Others, of a more exalted Mind,
Search out the *Temple*, the *Palladium* find,
Extatic Thoughts will all his Hours employ,
And *Contemplation* of unbounded Joy!
— Let Men of Wit and Genius daring climb,
And mount the Hill *Palladium* ſo ſublime!
And breathe the Air of Truth divinely pure,
(O for that Joy what Pains could I endure!)
But ſhould baſe *Foes* theſe Arts in DARKNESS lay, 4.
As *Sinon*'s Craft did once old *Troy* betray,
What Grief ſufficient could ſuch Loſs deplore,
Science, and Arts, and Troy, *are now no more!*
— Let *Individuals* of the human Race
Avert from hence ſuch national Diſgrace;
Improve each other, great *Deſigns* purſue,
Applaud the *Wiſdom* of the worthy *Few*;
Baffle the Scheming of the wicked Great,
Their Ways confound, and all their Works defeat.
— But hold, my Muſe, let *Science* bear the Sway,
In theſe *Veſperian* Climes, with cheering Ray;
DART forth, and guide our emulating Youth, 12.
In bright Effulgence, Virtue, Reaſon, Truth;
Employ for Thouſands Sciences will bring,
Adorn a Peaſant, dignify a *King*.
The MAN who cultivates the fertile SOIL, 5. 9.
And Bows to Science, finds a pleaſing *Toil*. 1.
Let *Damon* leave his LANTHORN, HORN, and CROOK, 6. 11. 13.
To gain a Sight of *Science*' famous Book,

And

And learn to form the *Geometrician's* Plan,
Which *Newton* with unrivall'd Skill did ſcan.
How bleſt by *Art* has Man's great Offspring been,
Though oft deceiv'd by Tricks of HARLEQUIN. *Prize.*
Science will mount the wand'ring Thoughts on high,
Make Men, like Sparks, or SMOKE, aſcend the Sky. 10
O *Science* pure, the *Muſes* FOND DELIGHT, 2.
Inſpir'd by thee, what LETTERS could I write! 7.

The PRIZE-ÆNIGMA *anſwered by the Same.*

THE World's a Stage, the People *Actors* are,
Strange *Scenes* they have, to make ſtrange *Things* appear;
Strange *Characters* they act in ev'ry Part;
No HARLEQUIN can copy Half their Art. *Prize.*

The PRIZE-ÆNIGMA *anſwered by* Roſalinda.

WHAT! becauſe *Garrick's* fled, muſt HARLEQUIN likewiſe
Forſake the Stage, and turn *Palladium-Prize!*

The *Prize-Ænigma* was alſo anſwered in Verſe by Mr. *Thomas Walker*, of *Stanton-Bury, Bucks.* — Mr. *Sadler* claims the 2 *Prize Palladiums*, and *Oedipus*, of *Cambridge*, whoſe Verſes were too long to inſert, claims the other 4 *Prize Palladiums.*

All the ÆNIGMAS *anſwered, in a Deſcription of the* EVENING, *by Mr.* Ozwin Sutton, *of* Epſom.

IN Cogitation deep my NAILS I bite, 9.
In Search of *Subject* proper to indite;
Invoke the *Muſe* to aid me in a Strain,
To paint the ſable *Evening's* ſolemn Reign;
Tell how the Skies now bluſh with parting Light,
And tip with Gold the lofty Mountain's Height;
How Shepherds with their CROOKS trip o'er the Plain, 13.
To meet the COURTEOUS Nymphs and tell their PAIN; *Alluding*
In harmleſs Mirth how form the jocund Ring, [*to* 1. & 2.
Chant *Early* HORN, or *Nancy Dawſon* ſing, 11.
Record the dewy Hills where Lambkins graze,
The curling SMOKE that from the Cot eſſays; 10.
How SHEERING TIME does keep his ſtated Round; *Alluding to* 12.
How *Britain's* Treaſure in the Fleece is found. [8.
The lengthened Shade now indicates the NIGHT, 4.
And plumeleſs Bats prepare their Wings for Flight;
The patient Anglers, who the Rivers roam,
The duſky HOUR now warns them to their Home. *Alluding to* 3.
The *Thruſh* and *Nightingale* their Notes now raiſe,
Their *Vigils* keep, and ſing their Maker's Praiſe.
O happy MAN who, in the Cloſe of Life, 5.
Diſtant from *Courts*, and COMEDIES, and Strife; *Alluding to Pr.*
Can thus ſerenely paſs his Time away,
Read Nature's BOOK, and her *great Lord* obey. 7

Jacas de Epſom's *Reply to* CLOE, *on her aſking him if he loved her.*

I love thee *Clo'* — but LANGUAGE fails — 7.
More than Bees LOVE ſow'ry Vales; 2.
More than *Cæſar* lov'd his LAUGH; 12.
More than Ladies Birth-night DANCE; 1.
More than *Fribble* loves himſelf;
More than Miſers DIRTY Pelf; 9.
More than *Maids* the Wedding Morn;
More than Sports-MEN *Early* HORN; 5. 11. 6.
More than *Poets* AIRY Lines; 10.
More than Statesmen DARK Deſigns; 4.
More than *Sylvia* loves her CROOK; 13.
More than *Hinds* the welcome Brook;
More than Belles the flatt'ring GLASS; 3.
More than Kine the bladed Graſs;
More than *Sots* to ſpend their TIME; 8.
More than *Hall* loves COLOMBINE; *Prize.*
More, I ſay, than *Miſers* Store;
More than Self — Can I ſay more?

TASTE.

ANSWER *to the* ÆNIGMAS, *by Mr.* John Clarke, *of* Lincoln.

HAIL! Goddeſs *Fortune!* wouldſt thou grant
A COURTEOUS Favour, which I want; 1.
Which is, in *Fact*, a ſmall Retreat
From envious *Factions* of the Great.
A pleaſant Cottage on a Hill,
A ſhady Grove, a purling Rill;
Here and there a fine Plantation,
And LOVE-ly View for Contemplation; 2.
About *ſix* Furlongs from the Sea,
Such is the Diſtance I would be.
There view with Pleaſure, I would fain,
Commerce, with her noble Train,
Gliding o'er the liquid Plain.
Bleſs'd with Peace of Mind and Health,
I'd envy not the *Miſer*'s Wealth,
Nor the States-MAN's darling Row'r,
For which he's anxious ev'ry HOUR. 5. 8.
In *Summer*'s Evenings clear and fine,
When brilliant *Sol* is on Decline,
E'er NIGHT her Mantle can unfold, 4.
The SHEPHERDS pipe their Flocks to Fold, 12.
And with their *Fair* trip o'er the Green,
Like *Colombine* and HARLEQUIN. *Prize.*
To make my Happineſs complete,
A Friend I'd chuſe in my Retreat;
To crack a *Joke*, and tell a Tale,
And SMOKE his Pipe, o'er Nut-brown Ale. 10.

A

A well-chose LIBRARY there should be, 7.
To entertain my Friend and me.
O grant me, *Fortune*, this Requeſt,
Then who, like me, would be ſo bleſt!

6. LANTHORN. 9. DIRT. 11. HORN.

ANSWERS *to all the* QUERIES *in the* PALLADIUM 1764.

I. QUERE 152, *anſwered by Mrs.* Ann Abby.

PLINY ſays, a Citizen, qualified for *equeſtrian* Dignity at *Rome*, muſt be worth 400 *Seſtertia*, = to 3229 *l. Sterling*; at this Rate, *Cleopatra*'s Pearl muſt be worth 807 *l.* 5 *s.*

Other Authors make it near 100 Times as much, *viz.* 78 *Thouſand* and odd Pounds. Who muſt we rely on?

The ſame anſwered by Mr. J. Lyon, *of* Margate.

BY *Chambers's Cyclopædia*, the *Seſtertium* = 8 *l.* 1 *s.* 1 *d.* ½, which multiplied by 100, = 805 *l.* 12 *s.* 6 *d.* Sterling, the Value of the *Pearl* which *Cleopatra* diſſolved and drank for her Breakfaſt.

Remark. The *Queen* of Proſtitutes, late of *Covent-Garden*, (but ſince waſhed clear of her Stains by holy Water,) is ſaid to have eaten a 50 *l. Bank-Note*, between her Bread and Butter, for Breakfaſt.

II. QUERE 153, *anſwered by Mr.* Thomas Walker.

THE *Honey*, or *Mildews*, proceed from too great an Exhalation, or Tranſudation, from Plants; which brings on the gummy or reſinous Subſtance contained in the Body of the Plant or Leaf. And this gummy Subſtance, by ſtopping up the Pores, ſtifles the Perſpiration, and thus kills the Leaves; or elſe, by making them a proper *Nidus* for the Eggs of *Inſects*, theſe produce young ones, which prey upon the fine *Fibres* of the Plant or Leaf, and by that Means deſtroy it.

Mr. J. Lyon gives much the ſame Account of the *Honey*, or *Mildews*.

III. QUERE 154, *anſwered by Mrs.* Ann Abby.

BY Experiment, it is found that the *Atmoſphere*, near the Earth, is warmer than the exterior Part. It is alſo found, that the Atmoſphere is more compreſſed in clear than in cloudy Weather: Conſequently, the more the Atmoſphere is compreſſed, or the clearer the Air is, the more *intenſe* the Cold or Froſt muſt be.

Mr. J. Lyon, of *Margate*, anſwers it in the ſame Manner.

Mr. T. Walker obſerves, that Nothing is more generally known to one who is but little acquainted with natural Philoſophy, than that Moiſture in the Atmoſphere prevents freezing, and it is evident it muſt be fuller of Moiſture when thick and hazy than when clear. That we may be convinced of this, by obſerving, that in a ſmall Iſland, where the Atmoſphere is frequently replete with moiſt Vapours from the neighbouring Ocean, Froſt and Snow ſeldom continue for any long Time.

Remark.

Remark. This is obſerved in the *Iſlands of Scilly.*

IV. QUERE 155, *anſwered by Mr.* T. Walker.

BY *4th Chap. 2 Chron. Solomon's* molten Sea was 10 Cubits over from Brim to Brim, 5 Cubits deep, and 30 Cubits round: But whether the Words "*round in Compaſs*" ſignified *circular*, or *elliptical*, is a Doubt; though the Dimenſions given imply the latter. Were it *circular*, a Solution to this Quere may be ſeen in *Lad. Diary* 1729, P. 6. But being conſidered elliptical, this Solution obtains.

Firſt, from the given Periphery and Tranſverſe Diameter, the Conjugate will be 9,088 Cubits.

Cubits		In. in 1 Cubit.	
Then, 10	X 21,888	= 218,88	= Tranſv. Diam.
9,088	X ſame	= 198,9093	= Conjugate.
5	X ſame	= 109,44	= Depth.

Solid Inch Content.

Now, 218,88 X 198,9093 X ,7854 X 109,44 = 3742375,51816.

Gallons.

And, 3742375,51816 X { ,00278 5 / ,003399 } fixed X rs for { Ale = 10422,5158 *Ale.* / Wine = 12720,3343 *Wine*

Mr. *J. Lyon*, of *Margate*, in *Kent*, ſays, Diam. = 10 Cubits (each = 1 ½ Foot) = 15 *Engliſh* Feet; Depth = 5 Cubits = 7 ½ Feet; its *Thickneſs* a Hand's Breadth = 3 Inches.

A different Account of its Dimenſions is given, 1 *Kings*, Chap. vii. V. 26. In the former Account, it is ſaid to hold 3000 Baths; in the latter only 2000: But this Difficulty is thus cleared. The one ſpeaks of what it would hold, filled to the Brim; the other, of the Contents in common Uſe, for the Prieſt to bathe in who offered the burnt Offering. See *Levit. Chap.* xvi. Ver. 28. and *Numb. Ch.* xix. V. 7. (According to the Lord Biſhop of *Peterborough*'s Calculation, the Bath contained 9,75 *Gallons.*)

	hhds.	gal.	
1ſt. 3000 X 9,75 = 29250 ; ÷63 = 464	18		*Wine*
2d. 2000 X 9,75 = 19500 ; ÷63 = 309	33		Meaſure.

Mr. *Thomas Sadler*, making the *Molten-Sea* a Hemiſphere, and not a Cylinder, determines its Content, according to that Principle, to be 9735,06 Ale Gallons, or 11884,36 Wine Gallons. Being 154 ½ Hogſheads of Ale, or 188 ½ of Wine.

V. QUERE 156, *anſwered by Mr.* Lyon, *of* Margate, Kent.

ONE Maſter Paſſion reigning in the Breaſt,
Like Aaron's *Serpent, ſwallows all the Reſt.* POPE.

But an unbounded *Avarice* is the moſt oppoſite to Reaſon. Though *Ambition, Love, Pride, &c.* are other prevailing Paſſions. Unnatural *Avarice* not only with-holds the Neceſſaries of Life from being enjoyed, but denies that Satisfaction which Nature requires, and reſiſts with extreme Pain, to hoard up immenſe Sums, which the Hoarder is Nothing the better for. But according to *Horace*,

An vigilare metu exanimem noctesque dieſque,
Formidare malos fures, incendia, ſervos,
Ne te compilent fugientes. ———

VI.

VI. QUERE 157, *anſwered by Mr.* William Welle, *of* Gadthorp, *near* Hull.

THE Queriſt, in comparing the 23d of *Geneſis* with the 7th of *Acts*, ſeems to miſtake in his Scripture *Hiſtory*. In the former, *Abraham* bought a Field, *&c.* for a Burial-Place of *Ephron*, a *Hittite*; but we do not find that St. *Stephen* mentions any ſuch Place in the *New Teſtament*; who has mentioned that Piece of Land which *Jacob* bought of *Hamor*, the Father of *Sychem*, (*Gen.* xxxiii.) though in *Acts* it is ſaid that *Abraham* bought. But this is an Error of the Copies, or St. *Stephen* means the Poſterity of *Abraham*. *See* Stackhouſe's *Hiſtory of the Bible*.

VII. QUERE 158, *anſwered by the* Palladium-Author.

BECAUSE it does ſo — There being no Reaſon to be given for many Effects produced by one Subſtance upon another, whereof the Mind has no *adequate Ideas*; which occaſioned Mr. *Lock*'s *Chapter* on the *Extent* of *human Knowledge*. For there are certain Bounds at which the Mind is forced to ſtop, and can proceed no farther, in its Enquiries after real Knowledge, *viz.* at where our *Ideas* ſtop, and go no farther. And ſuch is the Caſe in moſt of our Knowledge about the *Eſſences*, *primary* Qualities, and *Effects* of Subſtances, whereof we know Nothing but from Experiment. The Cauſe of the *magnetical* Variation, Effect of *Gravity* on Bodies, deſcending according to the *Squares* of the Times, the *ſpecific* Quality of *Jeſuit's Bark* to cure an Ague or intermitting Fever, *Mercury* an *antivenereal* Remedy, or any Counter-poiſon, *&c.* would have the ſame Anſwer to the ſame *why*, *viz. Experiment* only ſhews the *particular Effects*, of which Operation the Mind has no *adequate* Idea, nor has a Power to acquire any, becauſe of the Limits of *human* Knowledge. It could as ſoon be anſwered why every created Thing or viſible Subſtance wears ſuch and ſuch peculiar Form, or why Man, and every Kind of animal *Species*, had no other Form than that whereby they now exiſt. — Or why *Hemlock*, or other poiſonous Bodies, ſhould produce ſuch Effects; why ſome Men are rendered wiſe, ſome mad, or ſome otherwiſe, by natural or ſupernatural Cauſes.

PRIZE-QUERE *anſwered by Mr.* Iſaac Tarrat, *of* Epſom.

THE *Turkiſh Hegira* begun when *Mahomet* fled from *Mecca* to *Medina*, by hiſtorical Authority, on the 16th of *July*, 622, ſince *Chriſt*, *Julian* Account, or old Style, which (by *Tables*, *P.* 112, *Pal.* 1764) was on a *Friday*, the Dominical Letter being B, for that Year.

Now, the 16th of *July*, 622, *Julian* Style, (by *Tab. P.* 4. *Pal.* 1763) anſwers to the 19th of *July*, 622, *Gregorian* Style, + 3 Days Difference between Old and New Style) anſwerable to the 1ſt Day of the *Turkiſh* firſt Month, *Mubarram*, on a *Friday*.

To

To find the mean New Moon, in July, 622, *current, ſince* Chriſt.

By *Precept* in *Pall. Supp.*	Mean New Moon *Jan.*			
for 1764, P. 21.	d	h	m	s
1722, O. S.	5	22	24	33
P. 24. Mot. for *July*	25	17	8	21
Mean N. ☽, 1722, *July*	31	15	32	54
P. 23. Mot. for 1100 Yrs. —	18	5	15	33
Mean N. ☽, 622, fin. *Chr. July*	13	10	17	21

Hence, the Moon's Age, the 16th of *July*, 622 current ſince *Chriſt*, was 3 Days, or 2 from the 14th of *July*, true New Moon, Morn. *Vernal Equinox* the 20th of *March*, *autumnal Equinox* the 23d of *September*, 1764, by the *Royal Aſtronomer*, whence, P. 150, the Golden Number for that Year = 17. And, by *Tab.* P. 184, *March*, Golden Number 10, when New Moon is neareſt *March* 20, to which Golden Number anſwers 1757; and by *Tab.* P. 187, *Sept.* Golden Number 16, when the Full Moon is neareſt *Sept.* 23, to which Golden Number anſwers 1763. — Hence, according to mean Motion { N. ☽ and *Vernal* } *Equi-* { *Mar.* 20, 1757 } *neareſt* to { F. ☽ and *Autumnal* } *nox* { *Sept.* 23, 1763 } 1764.

The ſame was likewiſe anſwered by Mr. *T. Sadler* and *Oxonienſis*, being the 3 Competitors for the Prize. — The Lots being drawn, the firſt Prize, of 4 *Palladiums*, fell to *Oxonienſis*. The Prizes being again drawn, the ſecond, of 3 *Palladiums*, fell to Mr. *Tarrat*, and the third, of 2 *Palladiums*, of Conſequence to Mr. *Sadler*, of *Newhall, Cheſhire*.

ANSWERS *to the* PARADOXES *for* 1764.

I. PARADOX *anſwered by Mr.* T. Walker, *the Propoſer.*

A *Place* under the *Equator*, where the *Sun* has no Declination. On the 20th of *March*, the Sun is due *Eaſt* all the Forenoon, and due *Weſt* all the Afternoon, and is not *vertical*, or upon the Meridian, till about 7½ *Minutes* paſt 12, *equal* or *Clock* Time; conſequently the Sun is due *Eaſt* at 12, under the Equator, on the 20th of *March*.

Mr. *Iſaac Tarrat*, of *Epſom*, anſwered it in the ſame Manner, Mr. *Thomas Sadler*, and Others.

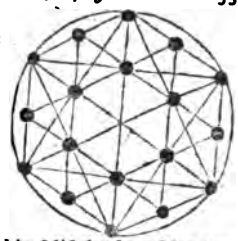
II. PARADOX *anſwered by* Mercator.

BENEAP'D before *Oporto* Bar,
Our Veſſel ran a-Ground;
Got off, next Tide, each honeſt Tar,
In *Port*, drank *Wine** all-round.

* Having only *Water on Board.*

III.

III. PARADOX *anſwered by Mr.* Iſaac Tarrat.



SHREWD *Necromancer, Joan-a-Noke,*
I thought your *Paradox* a *Joke,*
And that you had a Mind to *probe* us,
Or puzzle Mr. *Tantarabobus,*
But, by ſome *Trials* ſince I find
It may be done as here ſubjoin'd.

N. B. The Second Paradox propoſed by Miſtake from Memory, (as remarked in P. 106, *Pal.* 1764,) is not like copying *Ænigmas* or *Queſtions*, not underſtood by the Copier, to impoſe a falſe Character and Abilities on the Reader's Underſtanding.

ANSWERS *to the* QUESTIONS *in the* PALLADIUM, 1764.

I. QUESTION 268, *anſwered by Mr.* T. Edwards, *of* Cheam, Surry.

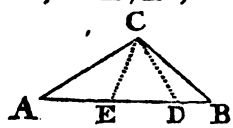
PUT $x =$ the Year, $y =$ Day of the Month, $z =$ Hour paſt Noon, and $1\frac{1}{2} \times z =$ Month from *January*.

Given	1	$x+y+z = a = 1733.$
	2	$x^2+y^2+z^2 = b = 2910913.$
	3	$xyz = d = 214956$; here $2xy = \frac{2d}{z}.$
$1-z$ &c.^{2}	4	$x^2+2xy+y^2 = a^2-2az+z^2.$
$2-4$	5	$z^2-2xy = b-a^2+2az-z^2.$
5, its Value fr. 3.	6	$z^2-2dz = b-a^2+2az-z^2.$
Reduced	7	$z^3-az^2+\frac{a^2-b}{2} \times z = d.$ Solved $z=6.$
$3 \div yz$	8	$x = \frac{d}{yz} = a-z-y,$ by 1ſt.
Whence	9	$y = \frac{a-z}{2} \mp \sqrt{\frac{z-a^2}{2} - \frac{d}{z}} = 21.$ Conſequently $x = 1733-6-21 = 1706.$ Hence, Mr. *Tarrat* was born in 1706, *September* 21, at 6, P. M.

In the ſame Manner it was anſwered by Mr. *John Probert* of *Bow-School*; Mr *Johnſon*, of *Hull*; Mr. *Tarrat*, of *Epſom*, the Propoſer; Mr. *William Pen*, of *Chalfont*; Mr. *John Swan*, of *Buxton* Free-School, *Derbyſhire*; Mr. *J. Lewis*, Mr. *Thomas Sadler*, Mr. *Thomas Walker*, and *ſeveral Others.*

V. QUESTION 272, *answered by Mr.* Edward Johnson.

PUT AB = 14 = b; AC = 10 = a; BC = 7 = c; and $b-c=d$. Then $\frac{a^2-d^2}{2bc} = \frac{51}{196}$



= ,260204, the verſed Sine of 42° 17′ = ∠B, whoſe nat. Sine call s; and put m = nat. Sine 60° ∠D;

whence, by Trigonometry, $m : c :: s : \frac{cs}{m} = 5{,}438 = CD =$ ED = CE, the Side of the equilateral △ ſought; and its Area is $\frac{c^2\sqrt{3}}{2m} = 12{,}804$ Chains. W. W. R.

Mr. *Iſaac Tarrat* obſerves, that it is *evident*, the Perpendicular to the inſcribing and inſcribed equilateral △ will be the ſame, which, by Trigonometry, he ſays is found = 4,4. And thence, 5,44 the Side of the equilateral △ required.

Mr. *B. Stepford*, of *Cawthorne* School, *Yorkſhire*, finds by an eaſy Proceſs the Side of the equilateral △ = 5,4385, and its Area = 12,807, confirming the foregoing Numbers.

Mr. *William Wells* finds the Side of the equilateral △ = 5,44, and Area = 12,784, in which Mr. *William Pen*, of *Chalfont*, agrees, and ſome Others. Mr. *Sadler* ſolved it.

VI. QUESTION 273, *anſwered by Mr.* Iſaac Tarrat.

$90\frac{1}{2} \times 90\frac{1}{2} = 8122{,}2515625$, which, divided by 160, the Poles in an Acre, gives 50,76097609, whoſe ſquare Root = 7,1246 Yards. Again 220 × 22 = 4840, whoſe ſquare Root = 69,5701 Yards, required, exactly agreeing with Mr. *William Penn*'s Numbers.

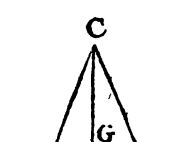
Mr. *T. Walker*'s Proceſs is *exactly* the ſame as Mr. *Tarrat*'s, agreeing to a *Decimal* in the 7th *Place*; and alſo agreeing in Method and 1ſt Multiplication. — We ſhould be more obliged to our Correſpondents in general for Solutions ſent us independent on one another, that we might rely on a *Compariſon* of the independent *Reſults*.

Mr. *Sadler* ſolved it.

VII. QUESTION 274, *anſwered by Mr.* Johnſon, *of* Hull.

PUT d = ,5236, a = Axis of the Globe. Then, by *Queſtion*, $da^3 = 1728a$;

$\therefore a = \sqrt{\frac{1728}{d}} = 57{,}4476$. Now put



x = GF; then CE = $\sqrt{x^2+ax}$, and CD = $a+x$. But, by ſimilar △s, CE : EO ::

CD

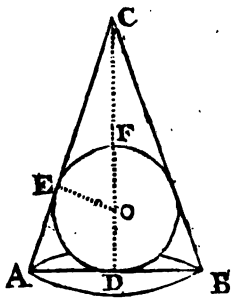
CD : AD $= \frac{\overline{x+a} \times a}{2\sqrt{xx+ax}}$, whence $AD^2 \times CD = \frac{a^2}{4} \times \frac{\overline{x+a}^2}{x}$, a *Minimum*. The Log. of the *variable* Part is 2 × the Log. $x+a$ = Log. x, whose Fluxion is $\frac{2\dot{x}}{x+a} - \frac{\dot{x}}{x} = 0$, whence $x = a$, that is, CF = FD, ∴ CD = $2d = 114{,}395$; and AB $= a\sqrt{2} = 81{,}2436$, the required *Dimensions*.

N. B. *The Solidity of the Cone is to that of the Globe as* 2 *to* 1.

Mr. *Walker*, by a different and more difficult Process, determines the Value of the Cone's Altitude = 81,2764, shewing, at least, that both *independent* Solutions are true.

Mr. *Isaac Tarrat*, of *Epsom*, solved it; as did Mr. *Sadler*, Mr. *John Clark* of *Lincoln*, and Others.

VIII. QUESTION 275, *answered by Mr.* Edward Johnson, *of* Hull.



PUT CD = 30 = a, AB = 24 = b, DG = x, and CG = $a-x$.

Then, $a : b :: a-x : \frac{b}{a} \times \overline{a-x}$ = EF, and $a \times \overline{a-x}^2$ = a *Maximum*. In Fluxions and reduced, $x = \frac{a}{3} = 10$; and EF $= \frac{2b}{3} = 16$, whence the *Solidity* = 670,208.

W. W. R.

Mr. *Tarrat* answered the same, and informs us that this Question was meanly taken from *Martin's Magazine*. Mr. *Thomas Walker* solved it by a true, but less *artificial*, Method.

The same was answered by Mr. *William Penn*, Mr. *Thomas Sadler*, Mr. *B. Skepford*, Mr. *James Taylor*, at *Low Crompton*, near *Oldham*, *Lancashire*, each making the Cone's Height 10, and Solidity 670,208.

IX. QUESTION 276, *answered by* NOBODY.

X. QUESTION 277, *answered by Mr.* Edward Johnson, *of* Hull.

THE Latitude arrived in appears to be between 28° and 29° N. Therefore, by the *Tables* in the *Royal Astronomer*,

Lat.

		Merid. Parts.
Lat. Land's End	50° 6′ N.	3484
Suppoſe Lat. ſailed to	28 40 N.	1797
Diff.	21 26	1687 = D.
	60	
Diff. Lat.	1286 = *d*.	

Put $s = 5413$, Sum Diſt. and M. Dif. Lat.
$L = 4615$, given Diff. *Longitude*.

Then the *Diſtance* is $= d\sqrt{\frac{L^2}{D^2}+1} = 3745{,}7$

But $D = 1687{,}0$

Sum $= 5432{,}7$
$s = 5413{,}0$

Error too much 19,7

Now, ſuppoſe Lat. ſailed to 28° 50′ N. and proceed as before, you will find the Error 1 Mile too much. Whence, by the common Method of proceeding, Lat. ſailed to is found = 28° 50′ 30″ N. Courſe, 70° 2′ 48″, Diſtance = 3737,5 Miles, and Diff. Lat. = 1275,5 Miles. W. W. R.

Mr. J. Lyon's *Anſwer, of* Margate.

BY *tabular* Rules, P. 305, *Royal Aſtronomer and Navigator*, he *aſſumes* a Courſe, and finds it by *Trial and Error*.

Mr. *James Taylor*, of *Low Crompton*, near *Oldham*, *Lancaſhire*, anſwered it.

XI. QUESTION 278, *anſwered by* NOBODY.

XII. QUESTION 279, *anſwered by Mr.* T. Walker, *of* Newport-Pagnel, Bucks, *according to the Method by* Cheſterfieldienſis, *the late Propoſer*.

CASE 1. ax^2+b^2 muſt be a Square, whoſe Root call $vx \pm b$; then, $ax^2 + b^2 = v^2x^2 \pm 2vxb + b^2$; whence $x = \frac{2vb}{a - v^2}$ (where v is the aſſumed Quantity) an UNIVERSAL THEOREM for *Caſe* 1.

CASE 2. ax^2-b^2 muſt be a Square, which muſt be thus ordered before the Root is aſſumed, *viz.* $x^2 = \frac{x^2+b^2}{a} = \frac{ax^2+ab^2}{a^2}$, a Square; the Root of whoſe Numerator call $vx \pm b\sqrt{a}$, then,

ax^2+ab^2

$ax^2+ab^2=v^2x^2\pm 2vxb\sqrt{a}+b^2a$; from whence, $x=\frac{2vb\sqrt{a}}{a-v^2}$, an UNIVERSAL THEOREM for *Caſe* 2. — Where note, that a muſt be a ſquare Number, to have the Anſwer in *rational* Numbers, which otherwiſe is impoſſible, except in particular *Caſes*.

CASE 3. ax^3+b^3 muſt be a *Cube*, whoſe Root call $vx+b$; then $ax^3+b^3=v^3x^3+3v^2x^2b+3vxb^2+b^3$; hence $x^2-x\frac{3v^2b}{a-v^3}=\frac{3vb^2}{a-v^3}$; or $x^2+x\frac{3v^2b}{v^3-a}=\frac{-3vb}{v^3-a}$, according as the Quantity v^3 is aſſumed leſs or greater than a; each of which Equations have two Roots, the firſt, one affirmative and one negative; but the laſt Equation has two negative Roots, therefore the affirmative Root in the firſt, will only ſerve our Turn in the preſent Enquiry, and is $x=\frac{\sqrt{12avb^2-3v^4b^2}+3v^2b}{2a-2v^3}$, an UNIVERSAL THEOREM for the 3*d Caſe*.

CASE 4. ax^3-b^3 muſt be a *Cube*, whoſe *Root* call $vx-b$; then $ax^3-b^3=v^3x^3-3v^2x^2b+3vxb^2-b^3$; hence $x^2-x\frac{3v^2b}{v^3-a}=\frac{-3vb^2}{v^3-a}$, or $x^2+x\frac{3v^2b}{a-v^3}=\frac{3vb^2}{a-v^3}$, according as v^3 is aſſumed greater or leſſer than a, each of which Equations have likewiſe two Roots, the former of which has two *affirmative* Roots, but the latter one *affirmative* and one *negative*, but although the firſt Equation produces two affirmative Roots, each of which will alſo ſerve our Turn in the preſent Enquiry, yet the affirmative Root in the laſt will not, therefore the two affirmative Roots of the firſt Equation are $x=\frac{3v^2b\pm\sqrt{12avb^2-3v^4b^2}}{2v^3-2a}$, an UNIVERSAL THEOREM for the 3d *Caſe*.

Now, if the two laſt *Theorems* be both thrown into one, they will ſtand thus, $x=\frac{3v^2b\pm\sqrt{12avb^2-3v^4b^2}}{2v^3-2a}$, an UNIVERSAL THEOREM for both the 3d and 4th *Caſes*.

But let each Theorem for the 1ſt and 2d Caſes be divided by b, and you will have $x=\frac{2v}{a-v^2}$ and $x=\frac{2v\sqrt{a}}{a-v^2}$; likewiſe let b be caſt out of the laſt univerſal Theorem for the 3d and 4th *Caſes*, and it will ſtand thus, $x=\frac{3v^2\pm\sqrt{12av-3v^4}}{2v^3-2a}$.

Now,

Now, in the *Theorem* for the 3d *Caſe*, when $a = 7$, then $x = 10$ and $z = 20$; when $a = 26$, then $x = 10$ and $z = 30$; when $a = 49$, then $x = 15$ and $z = 55$; when $a = 63$, then $x = 10$ and $z = 40$; when $a = 91$, then $x = 20$ and $z = 90$; when $a = 124$, then $x = 10$ and $z = 50$; and when $a = 215$, then $x = 10$ and $z = 60$.

And in *Caſe* 1. *Theorem* 1. when $a = 7$, then $x = 30$ and $z = 80$; when $a = 26$, then $x = 100$ and $z = 510$; when $a = 49$, then x and z have no integral Values, becauſe 49 is a ſquare Number, no two *integral* Values differing ſo little as Unity. When $a = 63$, then $x = 160$ and $z = 1270$; when $a = 91$, then $x = 28$ and $z = 172$; when $a = 124$, then $x = 12$ and $z = 134$; and when $a = 215$, then $x = 30$ and $z = 440$.

And in *Caſe* 4. *Theorem* 4. when $a = 9$, then $x = 10$ and $z = 20$; or $x = 5$ and $z = 5$; when $a = 13$, then $x = 15$ and $z = 35$; when $a = 19$, then $x = 30$ and $z = 80$; when $a = 28$, then $x = 10$ and $z = 30$; when $a = 65$, then $x = 10$ and $z = 40$; when $a = 126$, then $x = 10$ and $z = 50$; or $x = 2$ and $z = 2$; and when $a = 152$, then $x = 15$ and $z = 80$.

Now as to *Caſe* 2. *Theorem* 2. it is uſeleſs here, for when $a = 9$ the ſaid *Theorem* will exhibit a *rational* Value of x and z, yet no integral ones, for the Reaſon above given.

Therefore, to find how many INTEGRAL Values x and z have to the abovesaid Values of a, I proceed thus: Let $13x^2 - 1 = z^2$ if poſſible $= 9x^2 + 6xb + b^2$; then $4x^2 - 1 = 6xb + b^2$; here $2b \mathbin{\text{/}} 7x \mathbin{\text{/}} 7b$. Let $b + c = x$; then $3b^2 + 1 = 2bc + 4c^2$, here $2c \mathbin{\text{/}} 7b \mathbin{\text{/}} 7c$. Let $c + d = b$; then $3c^2 - 1 = 4cd + 3d^2$; here $d = 1$; then $x = 5$ and $z = 18$; which Values of x and z being multiplied by b or 10 give $x = 50$ and $z = 180$, the *Values* ſought. —— By proceeding thus with all the remaining *Values* of a, I find only one of them to ſucceed, *viz.* when $a = 65$, then $x = 2570$ and $z = 20720$, this ſecond *Caſe* being impoſſible to all the other Values of a, (found as above.)

N. B. When one Value of x and z is found in *Caſes* 1. and 2. infinite others are thence deduced. *Plaudite!*

XIII. QUESTION 280, *anſwered by Mr.* Thomas Walker, *of* Newport Pagnel, *near* Stanton-Bury, Bucks.

PUT $t =$ Tang. 21° 24′ = Sun's Declination on *July* 16, and $v =$ verſed Sine 60° 24′; then will $2t^2 + v = ,3126426 =$ *verſed* Sine 46° 34′ 43″, whoſe Half $=$ 23° 17′ 21″, to which adding the Half of 60° (= 30°) gives 26° 17′ 21″ = *aſcenſional* Difference in the greater Latitude. Again, ſay, as Tang 21° 24′ to Sine 26° 17′ 21″, ſo *Radius* to Tang. 48° 29′ 47″ = the *greater* Latitude; and the *leſſer* Latitude = 41° 30′ 12″. W. W. R.

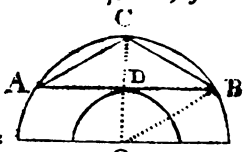
Mr. Edward Johnſon's *Anſwer.* — Put $t =$ Tan. Decl. 21° 27′, $v =$ verſed Sine 60° (= 24ᵐ of Time.) By Spherics, $2tt + v =$,331422 the verſed Sine 46° 42′, which add to 60°, and take Half the Sum, we get 26° 21′ = the *aſcenſional* Diff. in greater Lat. whoſe

whoſe Sine call 1. Then $\frac{t}{t} = 1{,}12968 =$ Tan. 48° 29′, the greater Latitude, whoſe Complement $= 41° 31'$, the leſſer Latitude ſought.

N. B. The Truth of this Solution is eaſily proved by the *Tables*, P. 202 and 203 of the *Royal Aſtronomer*.

XIV. QUESTION 281, *anſwered by Mr.* Edward Johnſon, *of* Hull.

SINCE AO = OC = 60, and OD = 30, it is *evident*, CD is alſo = 30; and therefore △ OAC is *equilateral*, and = △ ACB. Conſequently, the *Area* of △ACB is =



$OD^2 \times \sqrt{3} = \overline{30}^2 \times \sqrt{3} =$ 1558·845. W. W. R.

Mr. *James Taylor*, of *Low Crompton*, near *Oldham*, *Lancaſhire*, determines the ſame Area exactly, and the other Requiſites, by a conciſe Proceſs.

Mr. Tarrat's *Solution to the ſame.*

GIVEN CO = 60; OD = DC = 30; the *Radii* OD and OC being drawn, draw ADE, a Tangent to the Semicircle OD; then the Perpendicular CD, being the *greateſt poſſible*, conſequently the Triangle ACB will be ſo likewiſe. Then, by the Circle's Property,

$\overline{2CO - CD} \times CD = \overline{DB}^2$, that is, $90 \times 30 = 2700 = \overline{DB}^2$, ∴ DB = 51,9615, and *per* 47. *e.* 1. AC = CB = AO = CO = 60. Q. E. I.

Mr. *T. Walker*, gives the very ſame *Proceſs* and *Numbers* with Mr. *Tarrat*, agreeing with his Solution; thereby hindering us from a Compariſon of *independent* Reſults.

Mr. *Clark*, of *Lincoln*, anſwered it, and ſome Others.

XV. QUESTION 282, *anſwered by the* PALLADIUM-AUTHOR. (SEE *farther on.*)

XVI. QUESTION 283; *anſwered by Mr.* Edward Johnſon.

SINCE, by the Queſtion, the *Ship*'s Difference of Longitude is 3600 = 21600 *nautical* Miles; put t = Tang. 78° 45′, the Courſe; Radius = 1. Then, by Mr. *Emerſon*'s Principles of *Navigation*, $t : d$ (21600) :: 1 : $\frac{d}{t} = 4{,}296$, the *meridional* Parts of 58° 1′ S. the Latitude arrived in when the Port the Ship ſailed from bore due North. Now put 58° 1′ × 60 = 3481 Miles = p, and s = Secant of the Courſe: Then, $1 : p :: s : sp = 17843$ *nautical* Miles, the Diſtance run. W. W. R.

XVII. QUESTION 284, *answered by Mr.* Edward Johnson, *of* Hull.

If $x^{365} = 1{,}03$, we get, by the Nature of *Logarithms*, $x = 1{,}000081$ nearly, which put $= a$; $z = {,}000081$, and $n = 365$.

Then, by the *binomial* Theorem, $a^n = \overline{1+z}|^n = 1 + nz + \frac{n}{1} \times \frac{n-1}{2} z^2 + \frac{n}{1} \times \frac{n-1}{2} \times \frac{n-2}{3} z^3$, &c.

Or, $a^n = 1 + nz + \frac{n-1}{2} Az + \frac{n-2}{3} Bz + \frac{n-3}{4} Cz$, &c.

Whence, collecting the Terms,

$$1 = 1{,}000000000000$$
$$A = nz = 0{,}929565000000$$
$$B = \frac{n-1}{2} Az = 0{,}000435847230$$
$$C = \frac{n-2}{3} Bz = 0{,}000004271738$$
$$D = \frac{n-3}{4} Cz = 0{,}000000031314$$
$$E = \frac{n-4}{5} Dz = 0{,}000000000183$$

$$\text{Sum} = 1{,}030005150465 = a^n.$$

Make $x^n\ (1{,}03) - a^n = m$, then, by *Halley*'s *Theorem*, $\frac{ma}{na^n + \frac{n-1}{2} a} = -{,}000000013699 85 = b$; and $a + b = x = 1{,}000080986300 14$ the Amount of 1 *l.* for 1 Day, at 3 *l. per Cent. per Annum*, compound Intereſt, true to the laſt *decimal* Place. W. W. R.

XVIII. QUESTION 285, *answered by Mr.* Edward Johnson.

GENERAL RULE.

SET A *the* Fruſtum's *Depth to the* Gauge-Point: *Then againſt half the Sum of the Diameters you will find* A *Gallons*; *and againſt half Difference of the Diameters*, B *Gallons. Then*, $A + \frac{B}{3}$ = *the true Content of the conic Fruſtum.*

EXAMPLE.

EXAMPLE.

Let it be required to find, how many Gallons of Ale a conic *Fruſtum* will hold, whoſe Depth is 40, greateſt Diameter 50, and leaſt Diameter = 28 Inches.

$$\begin{array}{rr} 50 & 50 \\ +\ 28 & -\ 28 \\ \hline 2)78 & 2)22 \end{array}$$

$39 = \frac{1}{2}$ Sum Diameters. $11 = \frac{1}{2}$ Diff. Diameters.

Now ſet 40 to the Ale *Gauge-Point*, and keep the *Rule* fixed.

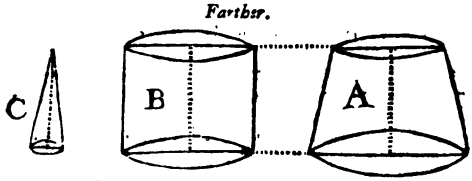
Then againſt 39 is . . 169,44 = A.

And againſt 11 is 13,4 Gallons, $\frac{1}{3}$ of which is = 4,45 = $\frac{B}{3}$.

Sum is the true Content = 173,89 Gallons = $A + \frac{B}{3}$, according to the GENERAL RULE.

For, ſince the *Fruſtum* of every right *Cone* is equal to a Cylinder, whoſe Baſe Diameter is an *arithmetical* Mean between the two Diameters of the *Fruſtum*, and a Cone whoſe Baſe Diameter is equal to half the Difference of the ſaid Diameters; the Cylinder and Cone having the ſame Height with the *Fruſtum*, the *Reverſe* of the *general Rule* is evident. W. W. R.

Farther.



Let A be the *Fruſtum* of a Cone whoſe Diameters are D and d, and Height = b; and B a Cylinder whoſe Diameter is $\frac{D+d}{2}$, and Height = b; alſo, let C be a Cone whoſe Diameter is $\frac{D-d}{2}$, and its Height = x.

Then, I ſay, when B + C = A, x is = b.

DEMONSTRATION.

The ſolid Content of the Fruſtum A is = $\overline{D^2 + dD + d^2} \times \frac{ab}{3}$; and that of the Cylinder B = $\overline{\frac{D+d}{2}}^2 \times ab$; and that of the

Cone C $= \overline{\frac{D-d}{2}}^2 \times \frac{ax}{3}$, ($a$ being $= ,7854$). Whence, we have $\overline{\frac{D-d}{2}}^2 \times \frac{ax}{3} + \overline{\frac{D+d}{2}}^2 \times ab = \overline{D^2 + dD + d^2} \times \frac{ab}{3}$; which, reduced, gives $x = b$. Q. E. D.

Thus I have shewn how the *Fruſtum* of a Cone may be reſolved into two *other Sol.ds* of a more ſimple Kind.

Mr. *Thomas Walker* has given a *Rule*, and *no Rule*, by ſundry different Multipliers (according to the *Ratio* of the different Diameters) to be drawn into the Difference of the Diameters, and the Product to be added to the leſs Diameter, for reducing the *Fruſtum* of the Cone to a *Cylinder*. — Who mentions his *new Improvements* made in *Gauging*; which he deſigns to publiſh on finding Encouragement. But ſurely the Encouragement on the *Merit of the Performance* will be ſufficient when it is publiſhed, (*without needleſs Subſcription,*) like his Encouragement given to the *Palladium-Author*, as ſoon as that *Work* is publiſhed, which he thinks ſufficient.

XIX. QUESTION 286, *anſwered by Mr.* Edward Johnſon.

PUT $A = 100\,l.$ the yearly Rent.
$F = 200\,l.$ the propoſed *Fine*.
$r = 4\,l.$ the Rate of Intereſt.
$s = 55,3$ the Sum of the Values of the 4 ſingle Lives [propoſed.

Then, ſince the Value of the Life moſt advantageous for filling up the Leaſe is $= 16,4$ Years Purchaſe, we have, *univerſally*, $\frac{100 - s \times F}{16,4}$ = preſent Value of all the Fines. And $\frac{100\,A}{r} - \frac{100 - s \times F}{16,4} = £, 1954,9$, or $1954\,l.\ 18\,s.$ the Purchaſe-Money, required.

N. B. The above *Theorems* are univerſal.

XX. QUESTION 287, *anſwered by Mr.* Edward Johnſon.

PUT $c = 8600,76$ the cubic Inches in 4 Buſhels, $x =$ Half the Side of the ſquare Baſe, and y Altitude of the *Pyramid*.

Then $4x^2y = 3c$, $\therefore y = \frac{3c}{4x^2}$. But $\sqrt{x^2+y^2}$ = perpendicular Length of the *ſlant* Side; whence, Area of each of the ſlant Sides is $= x\sqrt{x^2+y^2}$, or $\sqrt{x^4 + \frac{9c^2}{16x^2}}$, by Subſtitution.

In

In Fluxions, $4x^3\dot{x} - \frac{9c^2x\dot{x}}{8x^4} = 0$: Reduced, $x = \sqrt[3]{\frac{3c}{4}\sqrt{\frac{1}{2}}} = 16,5842$ Inches, $2x = 33,1684$, the Side of the Base, $y = 23,454$, the Altitude, and the perp. Length of the ſlant Side $= 28,725$: Conſequently, the whole Quantity of Board $= 12\frac{9}{10}$ ſquare *Feet*, which, at 2*d*. *per* Foot, comes to 2*s*. 1*d*. $\frac{1}{4}$.

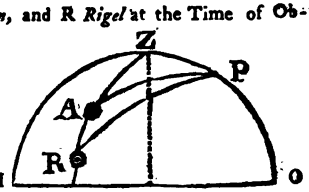
W. W. R.

Mr. *Thomas Walker* makes the Altitude to the *Length* of the *ſlant* Side as 1 to $\sqrt{3}$; but as he has not anſwered the *numerical* Requiſites of the *Queſtion*, we cannot compare whether he agrees with Others, and therefore omit his Solution, without the Trouble of examining it Step by Step. — Mr. *Tarrat*, of *Epſom*, anſwered the ſame *analytically*. And Mr. *James Taylor*, of *Low Crompton*, by a ſhort Proceſs and *Fluxions*, finds the leaſt Board 18,71535 Feet; and the Hopper's Breadth $= 33,162$ Inches; and the Hopper's Value $= 3s.\ 1d.\ \frac{1}{4}$.

Mr. *Thomas Sadler* gave an analytical Solution; but without the Numbers.

XXI. QUESTION 288, *anſwered by Mr.* Johnſon, *of* Hull.

LET A repreſent *Aldebaran*, and R *Rigel* at the Time of Obſervation, Z the *Zenith* of *London*, and P the elevated Pole.



In the Triangle APR, we have given AP and RP, the Co-Declinations of the two Stars, and the included Angle APR, the Difference of their Right Aſcenſions; to find $\angle RAP = 156° 44' 8''$, whoſe Supplement is $\angle ZAP = 23° 15' 52''$; and thence $\angle ZPA = 30° 23' 30''$, the angular Diſtance of *Aldebaran* from the Meridian; which reduced into Time, and added to 10 Hours, *(the Time of Obſervation,)* gives $12^h\ 1^m\ 34^s$, the Time of his Southing.

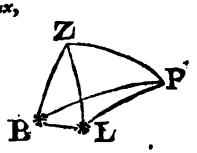
		h	m	s
Whence	*Aldebaran*'s Right Aſcenſion –	4	22	24
	Subtract his Southing – –	12	1	34
	Remains Sun's Right Aſcenſion	16	20	50

Which anſwers to *November* 28, the Month and Day, required.

XXII.

XXII. QUESTION 289, *answered by Mr.* Edward Johnson.

LET B, L, represent *Betelgeuse* and *Pollux*,



And put v = verſed Sine of $\angle ZPB$.
V = verſed Sine of $\angle ZPL$.
a = nat. Sine of ZP, the Comp. [Lat. of *London*.
b = nat. Sine of BP } Co-Declin.
c = nat. Sine of PL } of the 2 ✱s.
d = verſed Sine of BP—ZP.
e = verſed Sine of PL—ZP.

Then, ſince ZB = ZL by the *Queſtion*, we have, *per Spherics*, $abv+d = acV+e$, which brought into Numbers, &c. is $V-1,13v = ,3738$. Now, by Means of the given $\angle BPL = 27^{\circ}\ 6'$ the Diff. Right Aſcenſions, and a few *Trials*, v is eaſily found $= ,3619$, the *verſed* Sine of $\angle ZPB = 50^{\circ}\ 21'$; which reduced into *Time*, and added to 9 Hours, gives $12^{h}\ 21^{m}\ 24^{s}$, the Time of *Betelgeuſe*'s Southing; whence the Sun's Right Aſcenſion $= 17^{h}\ 20^{m}\ 56^{s}$, anſwering to *December* 12, the Month and Day *required*.

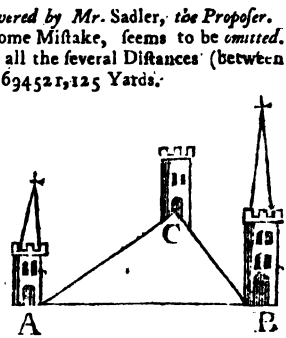
In the above Solutions, the Stars Declinations, Right Aſcenſions, &c. were taken from *Tables in the Royal Aſtronomer*.

N. B. This *Queſtion* may be ſolved by a *quadratic Equation*; but the Method of *Trial* here given ſaves Abundance of Labour. — Mr. *Emerſon*'s *Theorems* in his Trigonometry are moſt excellent.

XXIII. QUESTION 290, *answered by Mr.* Sadler, *the Propoſer*.

PART of my Queſtion, by ſome Miſtake, ſeems to be *omitted*. There ſhould be the Product of all the ſeveral Diſtances (between the *Tower* and two *Spires*) = 31694521,125 Yards.

PUT x = BC, y = CA, and z = AB: Put a = 960 Yards, $b = 31694521,125$.



Then, *per Queſtion*,

$$x+y+z = a;$$
$$xyz = b;$$

$\frac{1}{4}x, \frac{2}{4}x, \frac{3}{4}x$, in Progreſſion as x, y, z.

By 1, $x = a-z-y$, by Subſtitution, $ayz-yz^2-y^2z = b$;

and $\overline{a-z-y} : y :: z$, whence $y^2 = az-z^2-y^2$ $\therefore y^2+yz = az-z^2$. By Evolution, $y = \sqrt{\frac{1}{4}z^2+az-z^2} - \frac{1}{2}z$.

Subſtitute this Value of y, where b is laſt concerned, and we have

$$az \times \sqrt{\tfrac{1}{4}z^2+az-z^2} - \tfrac{1}{2}z, -z^2 \times \sqrt{\tfrac{1}{4}z^2+az-z^2} - \tfrac{1}{2}z, -z \times \sqrt{\tfrac{1}{4}z^2+az-z^2} - \tfrac{1}{2}z\Big|^2 = b.$$

From whence, z may be found

found = 379,8 ; $y = 316,5$; and $x = 263,75$: For the *Ratio* of the Progreſſion is 1,2 ; whence the *Tower's Height* is 65,90875 Yards ; the ſecond Spire 131,915 Yards ; and the third Spire, 197,9625 Yards. W. W. R.

Mr. *Tarrat analytically* anſwered the ſame.

XXIV. QUESTION 291, *anſwered by Mr.* Johnſon, *of* Hull.

PUT $x =$ Year of his *Birth*.
$y =$ Year of his *Death*.

Per Queſt. $\begin{cases} y - \sqrt{x} = 1596,4903 = a. \\ xy - \sqrt{y} = 2424664,5649 = b. \end{cases}$

Since x and y muſt be *whole* Numbers, by the *Nature* of the *Queſtion*, they are eaſily found without the Trouble of reducing the *Equation*. For, if the Year of his Birth be between 1400 and 1764, we are ſure to find it in 5 *Trials*, or thus :

The *ſquare* Roots of all the Years between 1400 and 1764, *(omitting Fractions,)* are 37, 38, 39, 40, and 41, reſpectively.

Whence $y - \sqrt{x} = 1596$ *(omitting Fractions,)* ſuppoſe $\sqrt{x} =$ 39 *(omitting Fractions,)* the Sum, $y = 1635$ and $\sqrt{y} = 40,4351$.

Now, ſince the *fractional* Part of $\sqrt{y}$ added to that of b, makes b a *whole* Number, I find, from the ſecond Equation, $x = \frac{b + \sqrt{y}}{y} = 1483$, $\therefore y - x = 152$ Years, the Age of old *Par*. W. W. R.

☞ The Method of *Trial* is here inſerted for *Novelty*, as well as for Expedition and Eaſe of Solution.

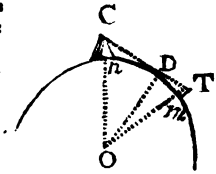
The ſame anſwered by Mr. T. Walker.

PUT $x^2 =$ the Year of his Birth. $y^2 =$ the Year of his Death, then, *per* Queſtion, $y^2 - x = a = 1596,4903$; and $x^2y^2 - y = b = 2424664,5649$. By the firſt Equation, $y^2 = a + x$, $\therefore y = \sqrt{a+x}$; which *Values* of y^2 and y, ſubſtituted in the ſecond Equation, give $x^3 + ax - \sqrt{a+x} = b$; hence is found $x^2 = 1483$, $y^2 = 1635$, the old Man's Age, being 152 Years. — It was ſolved by Mr. *B. Stepford*, Mr. *John Swan*, Mr. *Iſaac Tarrat*, Mr. *John Probert* of *Bow* School, Mr. *T. Edwards* of *Cheam*, Mr. *Sadler* of *Cheſhire*, and ſeveral Others.

XXV.

XXV. QUESTION 292, *answered by Mr.* Johnson.

LET C be the *Castle*, and T the *Tower*, allowing 69½ Miles to a Degree. The Earth's Semidiameter is 3976,6 Miles $= r =$ OD; put $c =$ 100 Yards $= \frac{5}{88}$ Mile; and OC $= r+1$, OT $= r+c$; then, by *Trigonometry*, $\frac{r}{r+1} =$,9997486 the nat. *Sine*



88° 42′ 54″ $=$ ∠OCD, and $\frac{r}{r+c} =$,9999859, the nat. Sine 89° 41′ 37″ $=$ ∠OTD. ∴ ∠COT $=$ 1° 35′ 29″, and its included *Arch* (allowing 69½ Miles to a Degree) is $=$ 110,601 Miles $= ms$; and TC $= \sqrt{2r+1} + \sqrt{2rc+c^2} =$ 110,443 Miles. W. W. R.

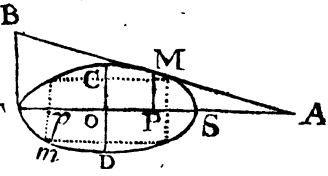
Mr. *Sadler* makes the Distance between the Tower and Castle $=$ 114,704 Miles, on the Arch of the Earth's Circumference.

Mr. *Tarrat* analytically and numerically gave the Solution, making the Distance on the curved Arch $=$ 114,7 Miles.

Mr. *James Taylor*, of *Low Crompton*, near *Oldham*, *Lancashire*, determined, by a short Process, the Distance between the Tower and Castle 113,35 Miles.

XXVI. QUESTION 293, *answered by Mr.* Johnson.

PUT OS $=$ OT $= \frac{34}{2} = t$, OC $=$ OD $= c$, and $p = 80$, the given Periphery; then $1 - \frac{p}{3,1416 \times 2t} =$



,251042 $= n$, and $4n - 3n^2 - \frac{n^3}{2} - \frac{53n^4}{24} =$,8039 $= d$, therefore $c = t\sqrt{1-d} =$ 7,527, the semi conjugate Diameter.

For the greatest inscribed Parallelogram.

Put $x = op$, then $pT = t - x$; and, by Property of the *Ellipsis*, $pm = \frac{c}{t}\sqrt{t^2-x^2}$, Half the Breadth of the Parallelogram; and $\frac{c}{t} \times x\sqrt{t^2-x^2} = \frac{1}{4}$ Area, a *Maximum*. In

Fluxions,

Fluxions, $2t^2\dot{x}x - 4x^2\dot{x} = 0$, $\therefore 2x = t\sqrt{2} = 24,0426$, the *whole Length*; and $2pm = c\sqrt{2} = 10,64478$, the *whole* Breadth of the *Parallelogram*; whence, the *Area* is $= 2tr = 255,918$.

For the leaſt circumſcribing Triangle.

Let $PS = x$, then $TP = 2t - x$, and $PM = \frac{c}{t}\sqrt{2tx - x^2}$, *per* Conics; alſo, the Subtangent $AP = \frac{2tx - x^2}{t - x}$, By the Nature of Tangents. But, by ſimilar Δs, $AP : PM :: AT \left(\frac{2t^2 - tx}{t - x}\right) : BT = \frac{c}{x}\sqrt{2tx - x^2}$, whence the Area of the $\Delta = AT \times BT = tc \times \frac{2t - x}{tx - x^2} \times \sqrt{2tx - x^2}$, a *Minimum*. —— Or, taking the Square of the variable Part, we have, $\frac{|2t - x|^3}{|t - x|^2 \times x}$, a *Minimum*, whoſe Logarithm is, 3 Log. $\overline{2t - x}$, $-$ 2 Log. $\overline{t - x}$, $-$ Log. x = a *Minimum*. In Fluxions, $\frac{-3\dot{x}}{2t - x} + \frac{2\dot{x}}{t - x} - \frac{\dot{x}}{x} = 0$; reduced, $x = \frac{t}{2} = PS = OP$; hence $PM = \frac{c}{2}\sqrt{3}$, $AP = PT = \frac{3t}{2}$, and $AT = 3t$, and $TB = c\sqrt{3}$; $\therefore$ the *Area* of the whole Δ is $AT \times BT = 3tc\sqrt{3} = 664,894$. W. W. R.

Corollary. The *Parallelogram*, *Ellipſis*, and *Triangle*, are in the *Ratio* of 2, 3,1416, and $3\sqrt{3}$, reſpectively. *Plaudite!*

Mr. *Thomas Walker*, by an elaborate Proceſs, gave a Solution; but as he gave no Area, by which to compare *Reſults*, we therefore omit it, for a Solution of the moſt *general* and diſtinguiſhed Properties. Mr. *Sadler* analytically ſolved the ſame Queſtion, as did Mr. *Tarrat*, and ſome Others.

XXVII. QUESTION 294, *answered by Mr.* Edward Johnson.

GIVEN $\left\{\begin{array}{l} x-y-z=1708. \\ x^2-y^2-z^2=2992626. \\ z^3=x+1645. \end{array}\right\}$ Here x, y, and z, must be whole Numbers, and we may reasonably suppose that Mr. *Sadler* was born between the Dates 1600 and 1763.

Therefore, since $x+1645$ must be a Cube (z^3),

Suppose $x=1700$

Add 645 the given Number.

Sum $=3345$, to which find the nearest Cube $=3375=\overline{15}|^3$.

Whence $z=15$, and $x=z^3-1645=1730$, and $\therefore y=x-z-1708=7$.

That is, $x=1730$, the Year.
$y=7$, the Month.
$z=15$, the Day.
W. W. R.

N. B. These *Circumstances* of the *Question*, which make the Equations troublesome to reduce by the common Method, generally afford us a more easy Solution by the Method of *Trial and Error*; of which this Question and Solution are an *Instance*.

The same answered by Mr. T. Edwards, *of* Cheam.

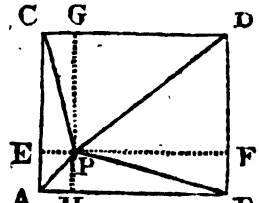
GIVEN	1	$x-y-z=a=1708.$
	2	$x^2-y^2-z^2=b=2992626.$
	3	$z^3=x+d\,(d=1645)$ Here $x=z^3-d.$
$1+z$	4	$x-y=a+z.$
$2+z^2$	5	$x^2-y^2=b+z^2.$
$5\div 4$	6	$x+y=\frac{b+z^2}{a+z}.$
$4+6\div 2$	7	$x=\frac{b+z}{2a+2z}+\frac{a+z}{2}=z^3-d$, by 3d.
Reduced	8	$z^4+az^3-z^2-az-dz=\frac{b+a^2+2ad}{2}.$
Solved	9	$z=15$; whence $x=1730$, and $y=7$.
Hence	10	Mr. *Sadler* was born *July* 15, 1730. W.W.R.

Mr. *Tarrat* answered the same, as did Mr. *John Swan*, Mr. *Sadler*, Mr. *J. Lewis*, Mr. *B. Stepford*, Mr. *John Probert* of *Bow* School, Mr. *T. Walker*, and some Others.

XXVIII.

XXVIII. QUESTION 295, *answered by Mr.* Johnson, *of* Hull, *only.*

PUT AH $= x$, HB $= z =$ GD, AE $=$ BF $=$ PH $= y$, and PG $=$ CE $=$ DF $= u$; then we have $x^2+y^2 = \square$, $\overline{AP}^2$; $z^2+u^2 = \square$, $\overline{PC}^2$; $z^2+y^2 = \square$, $\overline{PB}^2$; and $x^2+u^2 = \square$, $\overline{PD}^2$.

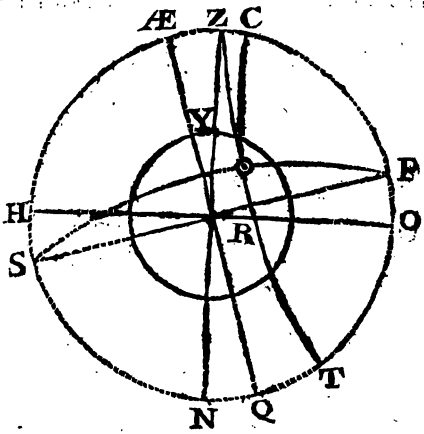


Put $x = \frac{3y}{4}$, then $x^2+y^2 = \frac{25y^2}{16} = \square, = \overline{AP}^2$: Alſo make $u = \frac{3z}{4}$, then $z^2+u^2 = \frac{25z^2}{16} = \square, = \overline{PD}^2$; and making $y = \frac{5z}{12}$, we get $z^2+y^2 = \frac{169z^2}{144} = \square, = \overline{PB}^2$. Now, writing $\overline{\frac{5z}{12}}^2 = \frac{25z^2}{114}$ for y^2, above, we have $\overline{AP}^2 = \frac{625z^2}{2304} = \square$, *univerſally:* But by the Nature of a Rectangle, $\overline{AP}^2 + \overline{PD}^2 = \overline{PC}^2 + \overline{PB}^2$; whence, by Tranſpoſition, $\overline{PC}^2$ $(= \overline{AP}^2 + \overline{PD}^2 - \overline{PB}^2) = \frac{625z^2}{2304} + \frac{25z^2}{16} - \frac{169z^2}{144} = \square = n^2$, which, by Reduction, becomes $1521z^2 = 2304n^2$, extracting the ſquare Root $39z = 48n$, $\therefore z = \frac{48n}{39}$, which muſt be a whole Number,

If $n = 39$, then $z = 48$, u $(= \frac{3z}{4}) = 36$, y $(= \frac{5z}{12}) = 20$, and x $(= \frac{3y}{4}) = 15$. Whence AB $= x+z = 63$, the Length; AC $= y+u = 56$, the Breadth of the *Rectangle*; and conſequently AP $= 25$, PD $= 60$, PC $= 39$, and PB $= 52$, *which are all the whole Numbers.* W. W. R. — *Plaudite!*

The PRIZE QUESTION *anſwered by Mr.* Edward Johnſon, *Mathematical Maſter, at* Hull.

LET Y repreſent the *Place*, in Latitude 15° 30′ N. where the *Dial* is ſuppoſed to be fixed; Z, the *Zenith*; YZ, the Continuation of the perpendicular *Gnomon*; T ⊙ C the Tropic *Cancer*; and Z ⊙ Part of a great Circle paſſing thro' Z, and touching the ſaid Tropic in ⊙.



Now, it is plain, the *Shadow of Gnomon* muſt alter its Courſe, when the Sun comes to ⊙, in the *Forenoon*; and alſo when he is at the ſame Diſt. from the Meridian in the Afternoon; at both which different *Inſtants* the Shadow may be ſaid to ſtand ſtill. Therefore, to find at what Time the *Sun* will be at ⊙; we have given (in the *right-angled* Triangle Z⊙P) ZP = 74° 30′ the Comp. Lat. P⊙ = 66° 31′, Co-Declination; and ∠Z⊙P, a right one, to find the ∠ZP⊙, the Time from Noon. Which, by *Trigonometry*, is = 50° 20′ 3″, and this reduced to Time, and taken from 12 Hours, leaves 8h 38m 40s, the Time in the *Forenoon*. when the *Shadow* of the *Gnomon*, erected perpendicular to the *Plane* of the *Horizon*, will firſt ſtand ſtill, or begin to change its Courſe.

But the *Sun riſes*, on the given Day, at 5h 29m 48s; conſequently the Duration of the *Shadow*'s forward Motion, in the *Forenoon*, is = 3h 8m 52s. Moreover, the Angle ⊙ZP = 72° 8′ 13″, from which take the Sun's *Amplitude* from the North, *viz.* 65° 34′ 26″, and the Remainder is = 6° 33′ 47″, the Quantity of the *Shadow*'s forward Motion, on the *Plane of the Dial*, in the Forenoon.

By ſubtracting 8h 38m 40s (found above) from 12 Hours, we get 3h 21m 20s, the Time in the Afternoon when the Shadow begins again to change its Courſe.

Whence, from Sun-riſing to 8h 38m 40s, in the Forenoon, the Shadow moves the ſame Way with Sun's apparent Motion, deſcribing

cribing 6° 33′ 47″ on the *Plane* of the Dial, and then firſt ſtanding ſtill, and beginning to change its Courſe, it moves backward the contrary Way to what it did before, till $3^h\ 21^m\ 20^s$ in the Afternoon; when it again ſtands ſtill and changes its Courſe a ſecond Time.

The whole Quantity of this retrograde or backward Motion of the Shadow on the Dial for that Day, in twice $3^h\ 21^m\ 30^s$ or $6^h\ 43^m$, is plainly = double the $\angle$ ⊙ZP (found above) = 114° 16′ 26″. And the Quantity of the *forward* Motion in the Afternoon, from $3^h\ 21^m\ 20^s$ till Sun-ſetting, is = 6° 33′ 47″, the ſame as the Quantity of forward Motion in the Forenoon, which being doubled, = 13° 7′ 34″, the Shadow's *whole* forward Motion for that Day.

W. W. R.

N. B. The horizontal Refraction of the Sun is allowed for in computing the Time of his Riſing.

☞ *It is evident, from this* Solution, *that if a horizontal Dial be placed between the* Equator *and a Parallel* [*of Declination*] *which the* Sun *deſcribes, on any given Day, the* Shadow *of the perpendicular* Gnomon *will move backward for ſome Part of that Day; as is mentioned in the Scripture.* —— This ingenious Correſpondent juſtly claims the *Prize*, without a *Competitor*.

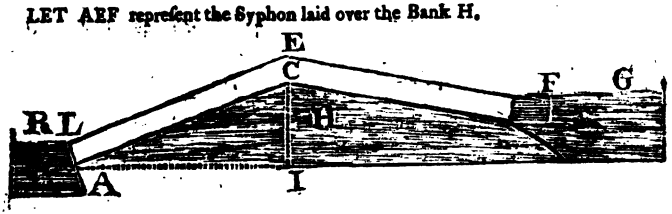
REMARK. The foregoing *Anſwer* is a Confirmation of Mr. *Robertſon's* Error, concerning this Kind of Queſtion, in his firſt and laſt Edition of *Navigation*: Beſides his ſeveral other Kind of Errors obſerved therein, frrm P. 70 to 73, in *Palladium* 1764, with his falſe *Propoſition* in Navigation candidly demonſtrated and corrected in the *Palladium-Supplement* for 1764, *for which his Thanks are due to the Corrector*.

ANSWERS *to the* QUESTIONS *in the* PALLADIUM-SUPPLEMENT, 1764.

By Mr. Edward Johnſon, *Mathematical Maſter, of* Hull.

I. Question *anſwered.*

LET AEF repreſent the Syphon laid over the Bank H.



Put $a = 16\frac{1}{12}$ Feet, Area (End A =) 16 Feet = m, the perpendicular Height of Surface F above Surface R = 4 Feet = $2d$, 60 Seconds = c, and $b = 41\frac{1}{2}$, the ſolid Feet in a Ton, Ale Meaſure. —— Then, ſince the Preſſure of the Atmoſphere at each End of the Syphon is the ſame, the uniform Velocity of the Water, running out at the End A, will be equal to that which a heavy Body acquires in falling through Half the perpendicular Diſtance of F above

above R; ∴ we have, by philoſophical Principles, $\frac{2cdm}{b\sqrt{\frac{d}{a}}}$ = 264,814 Tons, Ale Meaſure, the Quantity diſcharged *per* Minute.

The Syphon being filled with Water, and both Ends ſtopped,

The Preſſure upon the Door, at A, is = 4,464
Upon the under Part AC, of the Leg AE, = 16,741
Againſt each Side of the Leg AE = 10,427
Againſt the upper Part LE = 6,694

} Tons Avoirdupoize.

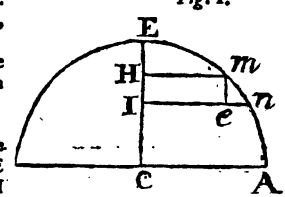
See *Emerſon's Mechanics*, *Cor.* 2. to *Prop.* 91, and *Prop.* 97 of the ſame excellent Book.

The Preſſure, computed above, ſhews that a Two-Inch Plank is by much too weak for a Syphon of theſe Dimenſions.

II. QUESTION *anſwered.*

PUT the verſed Sine EH (*Fig.* I.) = v, right Sine $Hm = s$, HI = $me = \dot{v}$, $en = \dot{s}$, and the Radius AC = EC = r, and Arch $Em = a$.

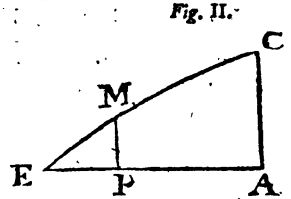
Fig. I.



In *Fig.* II. Let the Curve EMC be the Line of Sines, AE = the Quadrant EmA, and PM Sine $Hm = s$, EP = Arch $Em = a$.

Then, by the Property of the Circle, $s = \sqrt{2rv - vv}$, and $\dot{s}^2 = \frac{\overline{r - v}^2 \times \dot{v}^2}{2rv - v^2}$; alſo $\dot{a} = \sqrt{\dot{s}^2 + \dot{v}^2}$, $= \frac{\dot{r}v}{\sqrt{2rv - v^2}}$ by Subſtitution;

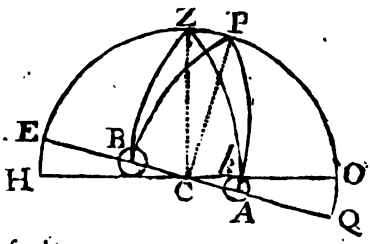
Fig. II.



whence $\dot{a}s$ (flux. EP multiplied by PM) = $\frac{\dot{r}v}{\sqrt{2rv - v^2}} \times$ $\sqrt{2rv - vv} = \dot{r}v$, the Fluxion of the Area EPM; whoſe Fluent is = rv, the Sum of all the Sines made on the Arch whoſe verſed Sine is v, and Radius r. Therefore, in a quadrantal Arch where $v = r$, rv becomes = rr; conſequently, the Sum of all the Sines that can be erected on a quadrantal Arch is equal to the Square of the Radius. Q. E. D.

III.

III. QUESTION *answered.*



IN the right-angled $\triangle CAb$, we have given CA ($\frac{1}{2}$ AB) $=$ 7° 30′, and $Ab =$ 16′, Sun's Semidiameter; to find $\angle ACb$ the Comp. of Latitude; whence, Sine CA : 1 (Rad.) :: Sine A b : Sine $\angle ACb$, $=$ 2° 2′ 36″, whose Comp. is 87° 57′ 24″, the Latitude sought

In this Solution the Sun is supposed to have no Declination, or to continue in the Equinoctial during the Space of an Hour: But if the Variation of the Declination be taken into the Question, then the following Theorem is universal and correct, *viz.* $D - ds + 2ds$

$$\sqrt{\left|\frac{v-k}{q-k} - \frac{\overline{v-k}}{q-k}\right|^2} = \text{Sine Lat. required.}$$

Where $\begin{cases} D = \text{Cosine AZ} - \text{AB.} \\ d = \text{Sine AZ.} \\ s = \text{Sine AP.} \end{cases}$ $\begin{cases} q = \text{versed Sine AZ} + \text{AB.} \\ k = \text{versed Sine AZ} - \text{AB.} \\ v = \text{versed Sine BZ.} \end{cases}$

REMARK. The 12th Queſt. *Pall.* by *Cheſterfieldienſis*, may be ſolved by Dr. *Wallis*'s Method of *Approaches*, but not without great Labour; and as the *Queſtion* is of little or no Uſe, it would be ſpending Time to no Purpoſe to give a Solution by that *Method*.

In the firſt *Caſe*, where $ax^2 + b^2 = z^2$; if $a+1$ be a *ſquare* Number, and $x = b$, then will $ax^2 + b^2 =$ a Square, z^2. Alſo, if $a-1$ be a *Square*, and $x = b$, in *Caſe* 2d, where $ax^2 - b^2 = z^2$, then z^2 will be eaſily found. A like Obſervation may be made on the 3d and 4th *Caſes*.

CORRECTIONS *of* SOLUTIONS, *P.* 56, PALLADIUM 1763.

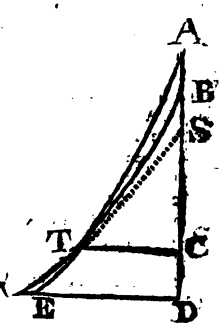
MR. *Brown* having diſcovered a Miſtake in the *Solution*, P. 56, in *Palladium* 1763, it is but *juſt* in us, and for the Honour of Truth and Science, to acknowledge it.

Mr. *Edward Johnſon*, of *Hull*, on examining his Papers, has found an *Error* in the Reduction of his *Maximum*; who therefore has ſent us the following *corrected Solution*; agreeing with Mr. *Brown*'s Numbers in the *Supplement* to the *London Magazine* for *January* 1763, (which we unjuſtly objected to through Mr. *Brown*'s having before neglected to give that Solution in its proper Place,) though Mr. *Brown* has miſrepreſented the *Contact* of the two Curves, near the Top, which ſhould be near the Bottom of the *Figure*.

N. B.

N. B. The above *Error* caused Mr. *Johnson* to conclude that the two Curves must touch at the Base; which are now found to touch a little above the Base, as at T.

PUT AD $= 5c = c$; DF $= 7c = b$; CA $= X$; BC $= x$; and TC $= y$. —— Then, the Equation of the Curve BTE being $px^4 = y^3$, and that of the Curve ATF, $aX^3 = y^2$; we have, by the Nature of *Tangents*, CS $= \frac{2X}{3} = \frac{2AC}{3}$, and also CS $= \frac{3x}{4} = \frac{3BC}{4}$; whence BC $= \frac{8AC}{9} = \frac{8X}{9}$. But CD $= c -$



X, $\therefore$ BD $=$ BC $+$ CD $= \frac{9c - X}{9}$; now from the Equation of the Curve BTE, we have $\overline{DE}^3 = p \times \frac{\overline{9c-X}^4}{\overline{9}^4}$, but $p = \frac{\overline{9}^4}{\overline{8}^4} \times a^{\frac{3}{2}} X^{\frac{1}{2}}$, $\therefore \overline{DE}^3$ becomes $= \frac{a^{\frac{3}{2}}}{\overline{8}^4} \times X^{\frac{1}{2}} \times \overline{9c-X}^4$ by Substitution, whence $\overline{DE}^2 = \frac{a}{\overline{8}^3} \times X^{\frac{1}{3}} \times \overline{9c - X}^3$. And since the Content of the Solid generated by the Curve BTE, revolving about the Axis BD, is $\frac{3}{11}$ of its circumscribing Cylinder, (see *Pall.* 1763, Page 57,) we have BD $\times \overline{DE}^2 =$ a *Maximum*, or $X^{\frac{1}{3}} \times \overline{9c-X}^{\frac{1}{3}}$, a *Maximum*: The Fluxion of the Logarithm of which is $\frac{\dot{X}}{3X} - \frac{11\dot{X}}{3 \times 9c - X} = 0$, whence $X = \frac{3c}{4}$, and BD $(= \frac{9c-X}{9}) = \frac{11c}{12} = 45\frac{5}{6}$, consequently BC $= x = \frac{2c}{3} = 33\frac{1}{3}$, and DE $= 69,51$, *&c.*

Mr. *Johnson* having thus candidly rectified and owned his Error, it is hoped Mr. *Brown* will rectify and own his Errors in Navigation (see

(see *Pal.* , P.) in the ſame candid Manner; ſince no Error detected can paſs for Truth.

REMARKS *and* CORRECTIONS.

THE *Solution* of the *Prize-Queſtion*, laſt *Palladium*, confidently objected to as *Nothing*, or inconſiſtent, by a *Bideford* Author, profeſſing to teach what he does not underſtand, is right, and is the only *conſiſtent* Anſwer (as Mr. *Johnſon* obſerves) that can be given to that *Queſtion*, the Subject having been handled before by *Simpſon*, *De l'Hoſpital*, and the beſt Writers on *Fluxions*, of which poor Don *Pedro* was ignorant, as well as his *Aſſociate*, *Exeter Jack*, who laughed at what he did not *chuſe* to give his Opinion concerning, for Fear of being found out for a *Pretender* to Science: Who is equally averſe to anſwer Letters of Science, and to truſt his Knowledge therein (for *Proof* of his Abilities) under Hand-writing, to which he prefers *Quibling* in Converſation, among Hearers who are no Judges of the Subject.

Queſt. 8th in *Pall.* 1764, was in the *Magazines*.

Page 40, *Pall.* 1764, Line 2, for $\frac{91x^3}{62}$ read $\frac{91x^3}{64}$.

Line 4, for $\sqrt{ax}$ read $\sqrt{8m}$.

At P. 71, *Pall.* 1764, The meridional Parts of 90° are ſaid to be 79157, a *finite* Number, inſtead of an *infinite* Number, as is juſtly diſtinguiſhed in the Tables of *Meridional Parts* in the *Royal Aſtronomer*.

The *Queſtion* about the Syphon *(Pall. Sup.)* is a proper one, and I could like to ſee Mr. *Emerſon*'s Solution of it; that the *Beverley* Philoſopher may be convinced of his Miſtake.

Printed *Bills*, entitled *Fool's Caps*, have been ſent down into the Country among the *Palladium Correſpondents*, reflecting on the *Palladium Author*; but they are looked upon with Contempt.

If you were to give, in each *Palladium*, a few *Examples* (well explained) of computing the Times of *Eclipſes*, &c. it would be very uſeful to young Aſtronomers, and would encourage the Sale of the *Royal Aſtronomer*, and the *Palladium* too; as ſeveral young Men in this Part of the Country have purchaſed that valuable Performance in Aſtronomy.

EDWARD JOHNSON.

☞ *Agreeable to our ingenious Correſpondent's Sentiments, (which are approved,) we exhibit the following* EXAMPLE, &c.

EXAMPLE *of computing* SOLAR ECLIPSES.

COMPUTATION *of the* SOLAR ECLIPSE, *April* 1, 1764, *from the* TABLES *in the* Royal Aſtronomer. *By Mr.* T. Cowper.

For the Meridian of LONDON.

N. B. ☌ *ſignifies* Conjunction.

	h	m	s
EQUAL Time eclip. ☌, at *Greenwich* Obſervatory	10	24	52
Equat. Time, deduct		3	50
Apparent Time at *Greenwich*	10	21	2
Diff. Long. between *Greenwich* and *London* ſubtract		—	20
Apparent Time of ecliptic ☌ at *London*	10	20	42
Place of Sun and Moon in the Ecliptic ♈	12°	9′	43″
R. A. Sun	11	10	53
App. Time fr. preceding Non. Deg. Add	335	10	30
R. A. *Medium Cœli*	346	21	23
Culminating Point	15	10	36
Nonageſimal Degree ♈	16	24½	
Moon's ecliptic Place ſub.	12	9½	
Moon's Diſtance fr. Nonageſimal Degree	4	15	0
Altitude Non. Degree	39	3	0
Moon's hor. Parallax fr. Sun (Sun's 12″)		54	4
Moon's Parallax in Longitude fr. Sun		2	33
Moon's Parallax in Latitude fr. Sun		4	20
True Lat. Moon N. aſcending, ſubtr.		39	35
Viſible Lat. Moon S.		2	29

Horary Motion	Moon	29	44
	Sun	2	28
	Moon fr. Sun	27	16
Horizontal Parallax Moon		54	16
Horizontal app. Semidiameter	Sun	16	2
	Moon	14	47
Hourly Increaſe of	Moon's Latitude	2	43
	Sun's R. A.	2	17
	Sun's Declination		59

As the Moon is to the Weſt of the 90th Degree at the true ecliptic ☌, the viſible ☌ follows. — And as her Parallax in Longitude from the Sun is 2′ 33″, the viſible ☌ muſt fall about 8 or 10 Minutes after the true ☌. Hence,

The Requiſites for London.

8m after apparent Time of true ☌	10h	28m	42s
R. A. *Medium Cœli*	348°	21′	41″
Culminating Point ♓	17	20	35
Nonageſimal Degree ♈	17	58½	
Moon's true ecliptic Place ♌	12	13	41

Diſt.

Dift. Moon from Nonagefimal Degree	5°	44′ 2/3
Altitude thereof	39	49
Moon's Parallax in Longitude fr. Sun		3 30
——————— in Latitude fr. Sun		41 32
Moon's true Lat. N. fubtr.		39 53
Moon's vifible Lat. S. defcending		1 39

True Mot. Moon fr. Sun in 8 Minutes	3 38
Different Parallax in Long. Moon fr. Sun in 8m fubtr.	57
Vifible Mot. Moon fr. Sun, in 8m	2 41

As vifible Mot. Moon fr. Sun above 2′ 41″ to 8m, fo Moon's Parallax in Longitude fr. Sun at true ☌ 2′ 33″, to 7m 36s, the Interval between the true and vifible ☌. Again,

	L. L.
As vifible Mot. Moon fr. Sun in the laft 8m, 2′ 41″	8.65050
To Rad. So the Diff. Moon's vifible Lat. in 8m, 0′ 50″	8.14267
To Tan. Moon's vifible Way fr. Sun, 17° 15′	9.49217
As Rad. To S. Moon's vif. Lat. 8m after tr. ☌, 1′ 39″	8.43933
So Cof. Moon's vifible Way 17° 15′	9.98001
To neareft Approach of the Sun, and 1′ 34″	8.41934
As Rad. to fame, fo S. Moon's vif. Way fr. Sun, 17° 15′	9.47209
To Dift. fr. vifible ☌ to the Middle 0′ 28″	7.89143
Vif. hor. Mot. fr. Sun (as 8m to 2′ 41″) 20′ 7″ fubtr.	9.52540
Time from vifible ☌ to the Middle 1m 24s	8.36603

☞ Moft *Aftronomers* take the vifible Latitude of the Moon, inftead of the *neareft Approach* of the Sun and Moon, for finding the *Digits* eclipfed and Scruples of *Incidence*. — Who alfo direct to enter a *Table* with the Moon's vifible Latitude at vifible ☌, and take out the Diftance from the vifible ☌ to the *Middle*, and find the *Time* by the vifible horary Motion of the Moon from the Sun: But thefe *Methods* are all *erroneous*; as thefe Requifites cannot be truly afcertained but by by finding the ∠ of the Moon's vifible Way from the Sun, as above.

To find the TIME *of Incidence, and thence the* BEGINNING *of the Eclipfe.*

Repeat the *Computation* for 85 Minutes before the Laft, (being as near the *Beginning* as can be eftimated,) as under.

85m before vifible ☌ (or within 24s) at *London, viz.*	9h	3m	42s
R. A. *Medium Cœli* then	327°	3′	25″
Culminating Point ♒	24	45	31
Nonagefimal Degree ♈	0	16	0

Moon's Place ♈	11°	31′	34″
Diſt. Moon fr. Nonageſimal Degree	11	25	34
Altitude thereof	31	28	9
Moon's Parallax in Long. fr. Sun		5	33
True Mot. Moon fr. Sun in $8\frac{5}{60}$		38	38
Sum of the Parallax in Long. Moon fr. Sun in $8\frac{5}{60}$, (becauſe the Moon is E. of the 90°,) *viz.* 3′ 30″ + 5′ 33″ – – – – –	=	9	3
Viſible Mot. Moon fr. Sun this $8\frac{5}{60}$ (*)		29	35
Moon's Parallax in Lat fr. Sun		46	7
True Lat. Moon N. ſubtr.		36	2
Viſible Lat. Moon S.		10	5

	L.L.
As viſible Mot. Moon fr. Sun, $8\frac{5}{60}$ bef. vif 29′ 35″	9.60289
To Rad. So Dif. Moon's viſible Lat. in $8\frac{5}{60}$, 8′ 26″	9.14785
To Tan. Moon's vif. Way fr. Sun 15° 55′	9.45496
As Rad. to Coſ. Moon's viſible Way fr. Sun, 15′ 55′	9.98302
So the *Scruples* of *Incidence*, 30′ 56″	9.71227
To the Motion of *Incidence*, 29′ 45″	9.69529
As vif. hor. Mot. ☽ à ☉ (=29′ 45″ in $8\frac{5}{60}$) 21′ 0″	4559
To 1 Hour, So the Mot. Incidence, 29′ 45″, ſubtr.	3047
To the Time of *Incidence*, $1^h\ 25^m\ 0^s$	1512

* In the *Computation* before made, the viſible Motion of the Moon from the Sun in $8\frac{5}{60}$ was 29′ 35″; but in finding the Angle of the Moon's viſible Way, the Scruples of *Incidence* and *Time* of the ſame, 29′ 25″, was uſed by *Miſtake*; which *Error* of 10″ affected the Computation but very little: The Time of *Incidence* being but 3 *Seconds* the more.

Moſt of the *aſtronomical Authors* uſe the *Scruples of Incidence* for determining the Beginning and End of an Eclipſe, inſtead of the *Motion of Incidence*, which is very erroneous; that is, they uſe the Motion of the Moon from the Sun in her viſible Way, or Path, inſtead of the viſible Motion of the Moon from the Sun in the *Ecliptic*. Which laſt Method is eſteemed by much the beſt.

For

For the Scruples of Incidence.

Apparent Semidiameter of the Sun	16′	2″	
Apparent Semidiam. ☽ at about 40° Altitude	14	57	
	30	59	
Nearest Approach	1	34	
			L.L.
Sum	32	33	. . 2656
Rem. Parts deficient	29	25	. . 3096
			2)5752
Scruples of Incidence	30	56	. . 2876

As the Semidiameter of the Sun to 16′ 2″, to 6 Digits, so the Parts defic ent 29′ 25″, to Digits eclipsed 11° 0′.

For the Time of Repletion *and* End *of the* Eclipse.

Take an Hour and half after the visible ☌, or 98m after the apparent Time of the true ☌, at *London*.

90m after visible ☌ (within 24m) *viz.*	11h	58m	42s
R. A. *Medium Cœli* then	10°	55′	6″
Culminating Point	♈ 11	52	38
Nonagesimal Degree	♉ 4	33	0
Moon's Place in the Ecliptic	♈ 12	58	0
Dist. Moon. fr. Nonages. Deg. (vis. Dist. 21° 50′, the Parallax being added, is 21° 35′ + 15′)	21	35	0
Alt. Nonagesimal Degree	47	50½	
Moon's Parallax, Long. fr. Sun (found by her vis. Dist. 21° 50′, and Alt. 90°, 47° 50′½ †)		14	54
True Mot. Moon fr. Sun in 90 Minutes		40	54
Increase of Moon's Parallax in Long. fr. Sun in 90m		11	24
Visible Mot. Moon fr. Sun in 90 Minutes		29	30

Moon's Parallax in Latitude fr. Sun	36	27
True Lat. Moon N.	43	57
Vis. Lat. Moon N.	7	40

	L.L.
As vis. Mot. Moon fr. Sun, 90m aft. vis. ☌, 29′ 30″	9.69167
To Rad. So is Dif. ☽'s vis. Lat. in 90m, *viz.* 9′ 19″	9.19111
To Tan. Moon's visible Way fr. Sun . . 17° 31′½ . .	9.49944
As Rad. to Cos. Moon's visible Way fr. Sun, 17° 31′½	9.97936
So the Scruples of Incidence, 30′ 56″	9.71227
To Mot. of Repletion, or visible Mot. Moon fr. Sun in the Ecliptic, 29′ 30″	9.69163

As

As the visible Motion of the Moon from the Sun, 29′ 30″, in 90 Minutes, To 90 Minutes, So Motion of Repletion, 29′ 30″, To Time of Repletion, 90 Minutes.

Hence,	h	m	s
Apparent Time of the true Conjunction	10	20	42
Interval of true and visible ☌ add		7	36
Apparent Time of visible ☌	10	28	18
Interval between ☌ and Middle, add		1	24
MIDDLE, or greatest *Obscurity*,	10	29	42
Time of Incidence, subtr.	1	25	0
Apparent Time of BEGINNING	9	4	42
Time of Repletion add to Middle	1	30	
END of ECLIPSE	11	59	42

† *The Parallax in Longitude of the Moon from the Sun* is found by adding the Sine of the Altitude of the Nonagesimal Degree, and the Sine of the Moon's visible Distance from the *Nonagesimal Degree*, to *Sharterly*'s Log. Log. of the Moon's horizontal Parallax from the Sun, which is the same as adding the Cosine of the Parallactic ∠ to the *Log. Log.* of the Moon's *Parallax* in Altitude, — And if the Moon has little or no Latitude, as in the Ecliptic, the Cos. Alt. of the Nonagesimal Degree *added* to Log. Log. of her horizontal Parallax from the Sun, will be the Log. Log. of her Parallax in Latitude from the Sun. — But if the Moon has considerable Latitude, the Sine of the Parallactic Angle, *added* to the Log. Log. of her Parallax in Altitude, will give the Log. Log. of her Parallax in Latitude.

☞ What is commonly called the *Sine* of the *Parallactic Angle*, is called the *Cosine* in *Halley*'s *Astronomy*; and what he calls the *Sine*, most Astronomers call the *Cosine* thereof.

To find the Moon's Altitude and Parallactic Angle in this Eclipse to 9h 3m 42s, *about* 1 *Minute before Beginning.*

As Rad. to Cos. Dist. Moon fr. Nonag. Deg.	11° 15′½	9.99156
So Tan. Alt. Non. Deg.	31° 28′	9.78673
To Tan. 4th Arc, —	30° 58′ 24″	9.77831
From Comp. Moon's Lat.	89 23 58	
5th or rem. Arc	58 25 34	

As

				L. L.
As Cof. 4th Arc,	30°	58′	24″ . . Co.	0.06681
To Cof. 5th Arc,	58	25	34	9.71900
So Cof. Alt. 90°,	31	28	0	9.93092
To Sine *Moon's Alt.*	31	23½	. . . . .	9.71673

As Cof. Moon's Alt.	31	23½	. . Co.	0.06874
To Sine Moon's Diſt. fr. 90°,	11	15½	. . . .	9.29060
So Sine Alt. 90°,	31	28	. . . . .	9.71767
To Cof. Parallactic ∠,	83	8½	. . . .	9.07701

The Complement of which, 6 51½, Dr. *Halley* calls the *Parallactic Angle.*

N. B. When the *Sun, Moon, &c.* are in the ſame *Nonageſimal Degree*, then a *vertical* Circle cuts the Ecliptic at right Angles, and then the *Parallactic Angle* is 90° ; but in *Halley*'s *Aſtronomy*, Nothing, or 0 Degrees.

The *Parallactic Angle* at the Moon is computed in the above Manner to 1 *Minute* before the Time of the *Middle*, and 1 *Minute* before the Time of the *End*. That is, to the Times of the Computations 10ʰ 28ᵐ 42ˢ, and 11ʰ 58ᵐ 42ˢ, and are found to be 85° 11′ and 67° 37′½, reſpectively.

By theſe, and the Moon's viſible Latitude near the *Beginning, Middle*, and *End*, the Type of the *ſolar Eclipſe* is drawn correctly, in the Manner it was ſent us by our Correſpondent, *(agreeing with Obſervation,)* which was proved to be correctly true in computing the Sun's Altitude to thoſe *reſpective Times*. And the Moon's *Depreſſion* and *Elevation*, below and above the *horizontal Line*, was found as delineated by our Correſpondent. And, by the like Method, the *Types* of all *Eclipſes*, *Occultations* of the *Stars*, and *Tranſits* of *Mercury* and *Venus*, ſent us by this Correſpondent, and inſerted in the *Lady's Diaries*, and *Palladiums*, of our compiling, have been performed for 17 or 18 Years back. Which *Method* is our Correſpondent's own Invention and Diſcovery, as there is not a *Hint* thereof to be found in any Author : Though, ſome Years ago, *Edmund Weaver* (ſucceeded by *White)* drew the *Types* of Eclipſes much better, in his *Ephemerides*, than any other Aſtronomer had done before ; which is remarked in the *Royal Aſtronomer* (P. 404.) But our Correſpondent never had any Communication with Mr. *Weaver*, and never ſaw him (he ſays) in his Life. Who *obſerves*, that he has ſeen a great many *Types* of the *Middle* of the laſt *ſolar Eclipſe* for divers Parts *of England*, as well as for ſome remote *Cities*, done by Mr. *Witchell* ; but that he never ſaw any one deſcribed by him in the *proper Manner*, above mentioned, according to a *curvilinear Path of the Moon in her viſible Way over the Sun :* Which Path is very different in Places lying at a conſiderable Diſtance from each other. But our Correſpondent can draw the true Repreſentations of all the *Eclipſes*, *Tranſits*, *Occultations*, and *Appulſes*, for any Part of the

the Globe: Who is fettered (he ſays) in his *Dependence*, and therefore hindered from purſuing his *greateſt Inclination and Delight, Aſtronomy*. Though we have Perſons filling Employments at *Obſervatories*, poſſeſſed of but a very ſmall Part of his *real* Abilities, as a *practical Aſtronomer*. Yet, at the ſame Time, this Nation is happily poſſeſſed of an able and eminent *Aſtronomer* of *Diſtinction*, whoſe *Vocation* being to *guide the Happineſs of Mankind*, cannot but diſcern (with a *Pity* and *Regret* peculiar to his native *Goodneſs* and *Diſpoſition*) the Diſadvantage and Loſs of Honour to this Nation, in ſuch *aſtronomical* Merit's going unrewarded by the Public.

☞ *See the* APPENDIX *to the* Palladium Supplement, *(which* Supplement *and* Appendix *may be had of Mr.* Fuller *in* Newgate-ſtreet, *and Mr.* Davenhill *in* Leadenhall ſtreet) *for the Agreement of the Obſervation of the ſaid Eclipſe at* London, *with the foregoing Computation thereof from the* Royal Aſtronomer; *and the Diſagreement of the Obſervation with other Computations from erroneous Tables.*

COMPARISON *of the* OBSERVATION *and* COMPUTATION *from the* Royal Aſtronomer, LONDON.

SOLAR ECLIPSE, *April* 1, 1764.

Mr. *Siſſon's, Strand,* Obſerved.	Computed from the *R. Aſtron. T. Cowper.*	*Error.*	*Strand,* Obſerved.
Apparent Time.			☉'s app. Diam. 31′ 59″
h m s	h m s	m s	☽'s app. Diam. 29 49½
Beginning 9 4 53	9 4 42	+0 11	☽'s hor. Paral 54 13
Middle 10 30 43	10 29 42	+1 1	☽'s up. Limb uncovered 2 28
Inferred End 12 2 20	11 59 42	+2 38	Computed from the *Royal Aſtronomer.*
Duration 2 57 27	2 55 0	+2 27	☉'s app. Diam. 32′ 4″
Digits 11d 4′ 30	11d 0′	+4′ 30	☽'s app. Diam. 39 34
			☽'s hor. Paral. 54 16

N. B. There was no more Reaſon for ſome to expect, as they did, a *total Darkneſs* in the late partial or annular Eclipſe of the *Sun*, in the Moon's Paſſage over him, than from the *Paſſage* of *Venus* over the Sun. Both *Appearances* being admired by the *curious*, as uſeful in Aſtronomy.

Mr. *Edward Johnſon*, of *Hull*, informs us, that he obſerved the *Eclipſe of the Sun, April* 1, 1764, near the *Spurn-Head, Yorkſhire*, and found the Time to correſpond very near the *Computation* from the *Royal Aſtronomer*. — That the Progreſſion of the Moon over the Sun's *Diſk* ſeemed to promiſe an annular *Appearance* for ſome Time; that a ſhort Time before the *Middle*, the luminous Horns of the Sun approached each other very faſt, but did not meet. That when the Sun was moſt obſcured, the lower Limb of the Moon was a very ſmall Matter below the *Sun*, but not quite in *Contact* with it. Who takes Notice, that when two *Circles*, nearly of the ſame *Dia-*

meter,

meter, touch inwardly, the Quantity of their intimate *Contact* is very conſiderable; and that therefore a ſmall Part of the Sun's *lower Limb*, for a *conſiderable Diſtance* to the *Weſtward* of that Place where the *Eclipſe* juſt appeared *annular*, muſt appear to be obſcured by the Moon.

Who ſays, that Mr. *Metcalf*, of *Wentworth Houſe*, in *Yorkſhire*, obſerved this Eclipſe by *Dolland*'s *Micrometer*, and found it to begin conſiderably ſooner than by his Calculation, and the Quantity eclipſed to be much leſs than he expected. Hence, he infers, that the *Tables* he computed by are *very erroneous*, and not to be depended on. That this *ingenious* Gentleman will, for the future, compute from thoſe very *correct Tables* in the *Royal Aſtronomer*, which, he is now convinced, (he ſays,) are the moſt accurate of any extant. Who thus concludes:

"The *Royal Aſtronomer*'s Merit will now carry it over all *Europe*. — Which "noble Performance muſt ſtand the Teſt of Ages, and will lend its friendly "Aid to Aſtronomers yet unborn, and will be ever an Honour to this Nation "and its ingenious Author."

EDWARD JOHNSON.

*** *Our Correſpondents are deſired to ſend their Letters, as uſual, (franked or Poſt paid,) directed for the* Palladium-Author, *at Mr.* Cole's, Mathematical-Inſtrument Maker, *in* Fleet-ſtreet.

Farther APOLOGY *concerning the* LADIES DIARY.

(*See P.* 19. *this* Palladium.)

IT having been alſo *abſurdly propagated* by certain Perſons, for Pretence of Juſtice in transferring the *Diary* Copy, that the *Palladium-Author*, during his compiling the *Diary*, introduced *Things* giving Offence, it is anſwered, that every *Diary*, or *Almanac*, muſt be licenſed by his Grace of *Canterbury*, the Biſhop of *London*, or their *Chaplains*, before it can be publiſhed, according to a *Grant* from the Crown to the *Stationers Company*. Therefore, *no Blame* can fall upon any *Diary-Author*, or *Compiler*, nor yet on the *Company of Stationers*, for what is *licenſed to be printed as aforeſaid*. Nor is the *Palladium-Author* reſponſible for the *Conduct* of the Company's *Guides*, in employing Authors, who *ſunk* the Sale of the *Diary* from 22 to 12 Thouſand: As it could not be expected that a *mere Mathematician*, Nameſake to a late *over-ruling Treaſurer*, that arbitrarily employed him by taking the Copy out of the Widow Proprietor's Hands, could furniſh Materials of fit Entertainment for *Ladies* and the general Reader.

The ſaid *Company* having (by *Grant* from the *Crown*) the ſole Property of printing and publiſhing all *Almanacs* in the *Engliſh Tongue*, *(but in no other Language,)* no Perſon whatſoever *inventing* and *improving* an annual Production, or Calendar, for them, can ſecure the Property of writing the Copy thereof to himſelf any longer than thoſe having the Direction of their Affairs, by Rotation, ſhall *think fit*; becauſe the ſaid *Company*, *only*, have a Power to print the ſame. Whoſe *Rulers*, for the Time being, are at *Liberty* to give the Writing of any Copy (though never ſo much improved) to another Compiler, with-

out giving a Reaſon for the ſame. As they took the *Lady's Diary* Copy from Mrs. *Beighton*'s Compiler, employed alſo by the then *Treaſurer*, who (by his Influence over the *Stock-keepers*) gave it to his *Nameſake* of *Woolwich Academy*, without giving the *Palladium-Author*, or former Compiler, a Reaſon for ſo doing. (*See the Charter and Grants from the Crown to the Company of Stationers, ſetting forth their Privileges, &c. printed by* Oſborne *and* Nutt. *To be had of Mr.* Meres *in the* Old Baily, *Price* 2s. 6d. *now in the Poſſeſſion of the* Palladium-Author.)

Since every *Almanac-Copy* muſt be authorized with the *eccleſiaſtical Imprimatur* before it can be publiſhed, it were to be *wiſhed*, that theſe *annual Productions* were made *Channels* of Improvement, for the Benefit of all his *Majeſty*'s Subjects throughout his whole Dominions, (inſtead of being the Channels they are, of *Prognoſtication*, and *Superſtition*,) whereby *uſeful Knowledge*, and the *public Revenue*, by *Stamp Duty*, might be greatly increaſed. Eſpecially if theſe *annually-wanted* Productions were, by Act of Parliament, put under the *Cognizance* of a proper INSPECTOR GENERAL before they went to the *eccleſiaſtical* Authority to receive their *Fiat* or *Imprimatur*.

The *Lady's Diary* (which is ſuppoſed to have made more *Poets*, *Hiſtorians*, *Philoſophers*, and *Mathematicians*, than all other Books extant) was originally invented by the ingenious Mr. *Tipper*, the Author alſo of the *Monthly Delights for the Ingenious*. His Succeſſor, in compiling the *Lady's Diary*, was the ingenious and capable Mr. *Henry Beighton*, F. R. S. who made therein Improvements in ſeveral Branches of Learning and *polite Literature*; as may be ſeen in the *Lady's Diaries* before the Year 1744; when the *Palladium-Author*, at the Requeſt of the worthy Widow of the *deceaſed Compiler*, aſſiſted her in compiling the *Diary* till 1753, that ſhe might receive the *Copy Money* for her own Benefit, (*though but* 10*l. a Year, for* 22 *Thouſand Diaries then ſold.*) He was alſo employed by the late *Treaſurer* to the *Stationers Company* to aſſiſt the *ſame Lady*, for their *Benefit* alſo, which he continued to do, *diſintereſtedly*, with great *Freedom*, till the Widow Lady was deprived of her Right of compiling the ſaid *Copy*: Though the *Company* vouchſafed to allow her (whilſt they employed another Compiler) the *annual* Copy Money as long as ſhe lived; in Order to transfer the *Diary-Copy* Right.

It was not thought an unworthy Character to write a *Lady's Diary* when Mr. *Beighton*, F. R. S. was the *Compiler*; after whom, his *Widow* conducted it in the proper *Character* of a *Lady's Diary*, (having every neceſſary Accompliſhment;) but ſince the Copy was under a mere *Mathematician* at *Woolwich*, and lately under mere *Mechanics* to compile, (who perhaps may excell in making a Lady's *Machine*,) whether that *Elegance* and *Utility* now reign in the *Lady's Diary*, that ſo conſpicuouſly appeared in a *Tipper*'s, *Beighton*'s, and a *Blowſabella*'s (or *Button*'s) Time, muſt be ſubmitted to public *Candour* and *Conſideration*. Eſpecially as ſeveral of our ingenious and able Correſpondents are of a contrary Opinion. And for which, ſee the following Sentiments of one of our able Correſpondents, as moſt repreſent the preſent *Lady*, in a tatter'd Dreſs, and bewilder'd in Mind.

ANSWERS

ANSWERS *to the* ÆNIGMAS *in the* LADIES DIARY, 1764.

The Soothsayer of Mount Taurus's LAMENTATION, *for the Despair and Decline of* DIARIA! *Addressed to the Shades of her Father* TIPPER, BRIGHTON *her Friend, and* BLOWSABELLA *or* BUTTON — *her three great Benefactors!*

O Grief of Griefs! Thou Shade of *Tipper* mourn,
Diaria doats, in LOVE at *Sixty-one*; 1.
Her REASON gone, appears a stupid LOG,* 2. 7.
DREAMS of her COACH, though worth not Half a HOG.† 8. 5. 11.
BARBERS, WEAVERS, CARD'NERS, all conspire, 4. 10. 3.
And EPITH'LAMIUMS sing as *Dirges* dire! 9.
With Pen from *Magpie*, or from *Jackdaw's* WING, 6.
In *Flats* and *Sharps*, by Guess alone they SING! *Prize.*
O Shade of *Tipper*, Shade of *Beighton* come,
And save your *Darling* from Oblivion's Womb!

* *A painted Doll.* † *A Cant Word for a Shilling.*

*** ONE of our *ingenious* Correspondents (Mr. *Tarrat* of *Epsom*) is pleased to tell us, that "*the* Palladium *for* 1764 *is like a rich Lady dressed for a Court* "*Birth-Night, loaded with Diamonds.*"

We thank this and all our other ingenious Correspondents for the good Opinion they are pleased to express of our Work, by calling it "*the most useful* "*annual Performance extant,*" as we also acknowledge their Favours of encouraging the Sale thereof, without which there could have been no more *Palladiums*, even at the Price of 2*s.* each; all other *Expedients* to continue it, at a less *Price*, having been tried in vain. And we have of late made a Present of the *Palladium Copy* to the Bookseller, *(whose annual Property it is,)* to print the same for promoting the Cause of *true Science*, and to oblige our Correspondents; which yet requires their Encouragement, in Order to repay his Expences, as there are so *few Readers* of these Subjects. While the Readers of *Novels, romantic Tales, &c.* (which are the Subjects of every Understanding) are innumerable and abounding.

Mr. *Walker* (near *Newport Pagnel, Bucks*) cries out against Plagiarism; as if we could hinder it, or any from setting up *false Characters*. His Letter of Reproach we transmitted to Mr. *Rowe*, of *Reginnis, Cornwall*, to answer it as he thought fit. And what he has quoted from *Horace* and *Juvenal*, and improperly applied to our *Partiality*, *(if he understands those Authors,)* may be answered in *English* from the Story of *Horace's* Fop. His Objection about *Rowe's conic Parabola* (adopting *conic* Circle, *conic* Triangle, as alike proper, and having like *conical* Properties) refers to Custom of Speech. This *wordy Champion* threatens to attack us in Form, for our Neglect of his Merit, in omitting to insert his numerous Objections and contemptuous Reflections against our Correspondents, particularly against Mr. *Rowe* of *Cornwall*; against whom he has, as an *Antiplagiary*, denounced War, (with great Shew of Pomp and Solemnity,) breathing *Wrath* and *Indignation!* But however the Fate of our Correspondents and of Mr. *Rowe* may be determined by him, we shall act upon the *Defensive* (as against all other Opposers) whenever his high Courage shall prompt him to fall on our *Front, Flank*, or *Rear!*

ERRATA *in the* PALLADIUM, 1764.

P. 20, L. 9. fr. Bot. for *Gunter's Scale*, r. *Chain.* P. 33, L. 6, for Mr. *Thomas Walker*, r. *Wilkin.* P. 35, L. 12, fr. Bot. dele *of Yorkſhire.* P. 47, L. 2, dele *of Yorkſhire.* P. 57, L. 6, fr. Bot. for *Fluxions*, r. *Navigation.* P. 58, L. 1, for *ſame Pall.* r. *Pall.* 1762. Omitting to dele *Yorkſhire Jack* and *Harlequin Conjurer.*

ERRATA *in the* PALLADIUM-SUPPLEMENT, 1764.

P.	l.	Read
22	36	1780|24^{d} 21^{h} 33^{m} 3^{s}
24	4	Add to Jan. N. Moon. Blot a Day.
33	9	1793
30	9	3^{s} 2° 42′ 45″
	11	Ditto
	12	7 2 41 55
	12	3 3 37 18
	15	1 4 41 55
	15	9 3 57 18
	21	7 15 52 4
31	11	0 3 20 43
	13	0 3 40 2
	19	+ 1 48
	20	28 4 2 3
	20	Ditto

ERRATA *in* PALLADIUM, 1764.

P. 60, L. 13, r. 53 Leap = 212 Years.

P.	L.	
109.	23,	r. x for Sine Co-Lat.
	24,	r. = Sine Sun's Decl.
	25,	r. = Cotang. Lat.
	28,	r. Tang. Co-Lat.
	29,	r. Sine Sun's Decl.
	33,	r. Sine Sun's Decl.
	33,	r. Sum of Rectangles.

We here rectify our *Error* communicated by our Friend, not obſerved till we communicated it to ſome Others, who then aſſumed the Knowledge of objecting to it.

P. 52, *Palladium* 1764. For *Proof* of the general Value of the *Fraction*, we put $\frac{a \times 9a^3 - x^3|^{\frac{1}{3}} - 2ax}{a - ax^2|^{\frac{1}{3}}} = \frac{3a}{8}$, its Value, = any Value, when $x = a =$ any Thing; but of *limited* Value when $a =$ given Quantity. Which is no more a *Proof* than that of $\frac{a^2 - x^2}{a - x} = 2a$, = any Value when $x = a$; though of *limited* Value when a is given.

The *Proof* of the latter is, $\frac{a^2 - x^2}{a - x} = a + x = 2a$, when $x = a$, agreeing with the *Anſwer* from the *Method of Fluxions*, diſputed by a *Dunmonian* Profeſſor of all *Arts* and *Sciences*. But as there is no other *Proof* of the general Value, $\frac{3a}{8}$, of the ſaid *irregular Fraction*, when $x = a =$ any given Quantity, and $\frac{3a}{8}$ limited, but from the Principles of *Fluxions*, it muſt *reſt* there; and cannot be compared *analytically*, unleſs by throwing the *Value* of the ſaid *Fraction* into a *Series*, and trying to what general Value the *Sum* of that *Series* will *approach* when $x = a$.

Strange

Strange but true Paradox! *that a* Fraction *ſhould be equal to* any Value *required, whoſe Numerator and alſo Denominator is of* no Value, *when* $x = a =$ *any* given *Quantity.*

Mr. WILLIAM CHAPMAN, *the Propoſer's,* SOLUTION *to* QUESTION XIX. Palladium 1764.

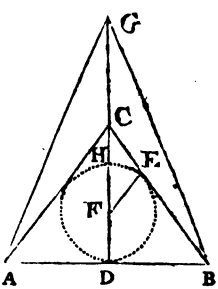
THE Value of the 4 Lives are 15,8, 15,4, 14, and 10,1, Years Purchaſe. Then the *Ages* put in for filling up the Leaſe when a *Life* becomes vacant, appear to be between 7 and 12 Years; which anſwers to 16,4 Years Purchaſe. Then it will be, As 16,4 : 44,7 :: 200 : 545,122 *l.* nearly, the preſent Value of all the *Sums* paid for renewing the Leaſe: Which being ſubtracted from 2500 *l.* the Value of the Eſtate, leaves 1954,378 *l.* the preſent Value of the Eſtate.

Mr. *Chapman,* (in *Queſtion* XX.) by a ſhort Proceſs, (putting $2x =$ *Hopper's* Breadth at the Top, $y =$ Perpendicular of the ſlant Side, $s = 8601{,}63$ ſolid Inches in 4 Buſhells) finds $x = \sqrt[6]{\frac{18\,ss}{64}} = 16{,}58479$ Inches, and $y = 27{,}72553$, and Inſide Superficies of the Hopper $= 1905{,}63$ Inches; Allowance for Thickneſs of the Board $= 13{,}696$ Feet; Expence 2*s.* 3*d.* ½. W. W. R.

Mr. Chapman's *true* SOLUTION *to* QUESTION X. *in* Palladium 1763, *correcting (he ſays) Mr.* Walker's *and Mr.* Rowe's Solutions *to the ſame.*

(*See P.* 36, Pal. 1764.)

LET ABC repreſent the triangular Field, and G the Place of the *Wind-Mill* from the Center of the inſcribed Circle to the Point of *Contact* E. Draw the *Radius* EF. Put FE $= 8 = a$; CG $= 27 = b$; AG $=$ BG $= 57 = c$; and HC $= x$; then will CD $= x + 2a$, and GD $= x + 2a + bx = x + c$. Putting $2a + b = e$, CE $= z$, then the right-angled △ FEC and CDB being ſimilar, (becauſe ∠DCB is common to both.)



As $z : a :: x + 2a : \frac{ax + 2aa}{z}$; and (by 47. *e.* 1.)

$aa + zz = x^2 + 2ax + x^2$, $\because zz = x + 2ax$.

Again, by 47. *e.* 1, $x^2 + 2ex + ee + \frac{a^2x^2 + 4a^3x + 4a^4}{x^2 + 2ax} = cc$; which reduced $x = z$, and thence AD $= 24$, and AC $=$ CB $= 30$, and AB $= 48$. W. W. R.

Remark. Thus we ſee the Conſequence when Correſpondents are not careful in uſing a *right Proceſs,* and in bringing out the true Numbers for Anſwer, *Correction* neceſſarily follows.

☞ THIS *Correſpondent,* the ingenious Mr. *Chapman,* objects to ſubſcribing for *Half a Dozen Palladiums*; becauſe (he ſays) "*One* Palladium *will ſerve to* "*read* 6 *Times over, as well as* 6 Palladiums *will ſerve to read once over.*" Who herein ſophiſtically argues againſt himſelf and the Continuation of the *Palladium.*

Palladium. For the *Palladium-Author* (annually giving away his Copy to *oblige* the Correſpondents, by inſerting their beſt Productions, and to promote *true Science)* means no more by getting *Subſcribers,* than to carry the Work on *(if poſſible)* without *Loſs to himſelf,* and to repay the Bookſeller for his *Expence, Hazard,* and *Trouble,* in printing and publiſhing that Work. Without which Encouragement, (by *Subſcription,* Purchaſe of the Work off the Bookſeller's Hands, or ſome other Contribution to the Expence,) it is impoſſible for the *Palladium* to be continued; as has been elſewhere obſerved, and is here repeated. For no Bookſeller will ſuffer a Loſs (when the End of all Trade ſhould be Gain) to *promote Science* and oblige ſcientific Correſpondents; the *Science of Trade* (ſupporting all other Sciences, and even the *Dignity* and Strength of this Nation) being the *Science of Gain*; without which Science being firſt promoted, all other *Sciences, Accompliſhments, Dignities,* and *Honours,* in this Nation, muſt fall to the Ground. So that, if Mr. *Chapman,* Mr. *Walker,* and ſome Others we could name, (objecting to our *ſubſcribing Scheme,* to oblige their own *Intereſt* and *Views* as much as the Author's and Bookſeller's, independent of each other,) do not chuſe to be *Chapmen* (at Bookſeller's Price) for as many *Palladiums* as they can diſpoſe of among their Neighbours, or can get their Friends and Neighbours to take off, *(whoſe Names ſhall be honoured in a printed Catalogue of Worthies of Science, as much as thoſe* Electors, *who, for the Good of their Country, vote for a* Member of Parliament,) why then there is an End of the *Palladium of Fame,* and of all the Honours attending it.

☞ The *Buyers* of the *Palladium* at 2*s.* will now have no Reaſon to object to its *Price,* ſince every uſeful *Science* will be improved therein, for their Improvement and Satisfaction, that is contained in all the *beſt Authors* extant; ſo as to render it a WORK of *univerſal Science* and *Utility,* for *ſo ſmall a Price as* 2*s.*

Of ſome late famous AUTHORS *and* PHILOSOPHERS.

AN Eighteen-penny *Pamphlet,* (lately printed for *W. Nicholl* in *St. Paul's Church-yard,)* called, *Short Obſervations on the Principles and moving Powers aſſumed by the preſent Syſtem of Philoſophy,* is brought to Light, by a deep *Hutchinſonian* Author, who pretends to overturn all Sir *Iſaac Newton*'s Philoſophy and all the Laws of Nature; who is ſworn Brother to the *Chatham* Philoſopher.

But our laſt famous *Honiton Aſtronomer,* Rival to the renowned *Kennedy,* is alſo *Rival* to the famous *Bamfylde,* late King of the *Gipſies* and *Beggars*; and therefore no Wonder he rivals the leſs ſagacious Sir *Iſaac Newton* by his *immortal* IMPROVEMENTS in ASTRONOMY!

The *Hull Syphon-Makers,* or *Beverly* Philoſophers, (condemning the *Newtonian* and *Emerſonian* Principles of Mechanics,) made a *Syphon* of *ſlit Deal,* and undertook to drain the Country about *Hull* (or the *German Ocean* if there had been Occaſion) of its Waters; being drowned by the Floods from the heavy Rains that happened, ſo as to oblige the Inhabitants to quit their Houſes. But theſe *Beverly* Philoſophers not knowing the Nature and Force of *Preſſure,* their ſlit Deal *Syphon* would not perform; and inſtead of emptying, as they propoſed, the overflowing Waters about *Hull* into the River *Humber,* their Syphon was deſtined to float there by itſelf, without any Owner.

(See Eclipſe-Races, *Price* 1*s. ſold by Mr.* Davenhill *of* Leadenhall-ſtreet, *and Mr.* Fuller *of* Newgate-ſtreet, *for a particular Account of the ſame, and of other extraordinary Affairs.)* — In the ſaid *Pamphlet,* P. 18, L. 8, fr. Bot. for *not thin Ring Preſſure,* read *not thinking of Preſſure.*

Some

Some of the famous FERGUSON's *and* KENNEDY's *Notes compared with each Other and with Themſelves.*

MR. *Ferguſon*, in the *Crit. Rev.* for *May* 1763, P. 343, *believes Mr.* Kennedy *to be an ingenious Man, a Searcher for Truth and ſincere Chriſtian* — Notwithſtanding he had before proved him to be guilty of the *groſſeſt Errors* and *Abſurdities* in *Moſaic* Aſtronomy. — *Kennedy* aſſerts a mathematical *Preceſſion* in his *Year*, *Lunation*, and *ſydereal Day*, yet excuſes himſelf of *detected Errors* by Mr. *Ferguſon* in his candid *Examination*, by a *limited Senſe* of *Aſtronomical*, &c.

The *Critic* ſays, (P. 342, *Crit. Rev.*) the *Bible* was intended for a better Uſe than that to which Mr. *Kennedy* has applied it. The *Divine*-Author ſays, that the Bible is the *Rule* of his *aſtronomical* Belief; for which the *immathematical Ferguſon* repreſents the *inaſtronomical Kennedy* to be in an Error; while Mr. *F.* makes 26 Hours inſtead of $24^h\ 43^m$ between Mr. *Kennedy*'s and *Pound*'s Creation Full Moon, *Oct.* 4008 before *Chriſt*. P. 10, L. 6, *erroneous aſtron. Pamphlet*, Mr. *F.* ſays, the Sun is *nearer* the Earth in our Summer than Winter; but P. 14, L. 13, contrarily ſaith, that the Earth is nearer to the Sun in Winter, and fartheſt from him in Summer. P. 343, *aſtr. Pamph.* for 4007 read 4008 before *Chriſt*.

See *laſt Advertiſement in the* Daily Advertiſer, *Feb.* 11, 1764. And ſee *Omnes Tabulæ Ferguſonianæ perpetuò blunderanæ, à conſpicuo Authore, F. R. S. non obſcuro quackero et hodgepodgero Aſtronomo.*

The *ſolar Period*, of 1440 Years, called by Mr. *Rivet* the *Baſis of Chronology*, (though the Foundation of *Ignorance* and *Error*,) comes ſhort of the *Perfection* he intended. — His *Attempts* in *Decimal Arithmetic* are very *innocent* and *worthy*; if the Price of his *Book* had not exceeded its real *intrinſic* Value.

To the AUTHORS *and* DISTRIBUTORS *of* SCANDAL *for* WIT *and* HUMOUR, *in Fool's-Cap Hand-bills*, April 1, 1764.

Qui capit, ille facit.

LEAVE *Wit* and *Humour* to ſuperior Parts,
And undervalue all but *borrowed Arts*;
Let *Ben* beneath *Old Maps* and *Pages* groan,
And *Jack* be deck'd with *Fluxions not his own*.
Yourſelves to native *Billingſgate* betake,
Prize *Impudence*, and *Decency* forſake;
Teach *Water* Language in the higheſt Strain,
And the GREAT SCIENCE, *how to be profane!*
Teach *Oyſter-Wenches* how to ſwear and curſe,
And *Play-houſe* Link-Boys how to take a Purſe!
Incendiaries like, who always love the Dark,
Go, ſcatter *Hand bills* in *St. James*'s Park!
Libel what's SACRED, what you dare not face,
And be the *Authors* of your own DISGRACE;
Call *Reaſon*, *Madneſs*; Candour call Pretence,
And *Rectitude* of Judgement, *Want of Senſe*;
Abuſe the *Government*, (conceal'd from Light,)
Call all Things *Error* that you know are *right*;
Swear and forſwear — as ſuits your Wrath and Spight!

} Attack

Attack *Religion*, Things of *Shame* defy,
Degrade the *Truth* — and never fear to *lie*.
Such *happy* Talents, when unknown for Crimes,
Shall celebrate your *Names* to future Times;
When good 'Squire CATCH, for ſuch great *Deeds* perhaps,
Shall friendly fit you with your own FOOL'S CAPS.

MEMORITER.

ARGUMENTS *againſt* Deſperate MEN ſcragging* *Themſelves.*

Qui fecêrunt in Culpâ ſunt.

CONSIDER on't, and think again,
Few are the very worſt of Men,
And thoſe who do the *worſt of all*,
Should wait for *Tyburn*'s timely Call.
Forging is but a *ſimple* Caſe,
To rob and murder's far more baſe.
Incendiaries may miſs their Mark,
Firing their PISTOLS in the Dark!
Flinging by Yards is ſmall Offence
To Crimes of larger Conſequence.
And *Crimes* ſtill riper grow like *Fruit*,
To gather which the *Time* ſhould ſuit.
Whether more be, or leſs of them,
When thriving on a *hopeful Stem!*
Therefore defer the *dire* Intent
To *ſcrag yourſelves* — live and repent;
To all a-Row Heav'n's Will be DONE,
With *Juſtice* to each Mother's Son.
And when the *Fruit* is fit to fall,
Squire CATCH will better *ſcrag* you All!

ANTIGALLICAN.

* *A Cant Word for hanging.*

A LADY's DREAM.

SHE fancied herſelf walking with her *Guide*, till ſhe came into a *ſpacious Room*, where ſhe beheld FOUR PERSONS, three of whom ſtood on an *Eminence*, and the fourth kept walking about the Floor, in the Midſt of the ſaid Room, beneath the Reſt, with a lighted Torch upon his Head! — She turned to her *Conductor*, and aſked him who theſe *four Perſons* were; who thus anſwered her.

The venerable looking *Old Man*, ſtanding on an Eminence oppoſite to you, is TIME, and the Woman ſtanding on TIME's right Hand is PRUDENCE; the Perſon ſtanding on TIME's left Hand, armed with a Shield is CAUTION; and the Perſon you ſee walking in the Midſt of the Room is VANITY.

TIME having then a *Bow and Arrows* in his Hand, he immediately ſhot a Dart at VANITY, which hitting the *Torch* on his Head, down it fell, and vaniſhed; at which TIME then ſmiled, and immediately ſhot three ſeveral Darts at

CAUTION,

CAUTION, which ſtung on his *Buckler* and rebounded; ſo that PRUDENCE, ſtanding on TIME's right Hand, caught each Dart, ſeverally, in her Hand, and preſented them to TIME. CAUTION then vaniſhed behind his *Broad Shield*, or *Buckler*; and TIME and PRUDENCE then remaining, both ſmiled! When her *Conductor* retired from the Room, and the *Lady* awakened from her *Dream*, in a green Field!

N. B. R. T. H. *born the 17th of* January, *Half paſt* 12 *at Noon*, 1764, *and chriſtened at St.* Sepulchre's *Church*, London, *the 19th of* February, *following.*

APOLOGY *for our* CRITICAL REMARKS.

OUR Intention is to promote Truth and aboliſh Error, and not to give Offence; though we find ſome Authors are offended at our *critical Remarks* and *Corrections* of *Error*, which muſt ariſe from their Deſire of being thought *infallible*: And ſuch Authors (eſpecially *Teachers*) are never willing to own themſelves in an *Error*, even while they undertake to correct the Errors of all others: Such is the *Perverſeneſs* and *Injuſtice*, we find, reigning in human Nature. But we, obſerving a contrary Conduct, ſubmit our own *Miſtakes* (not ſuppoſing ourſelves *infallible*) to the *candid* Correction of Any, ſince Nothing *untrue* can ſupport itſelf.

Kennedy and *Bamfield* are inſufferable Inſtances of Error! yet are not pleaſed to be corrected. And we find *few Authors* are pleaſed at our making them appear leſs conſiderable in the Eyes of others than they appear in their own vain *Opinions*. And ſome have been ſo weak as to threaten us with the *Law*, (who would make a Figure among *Pope*'s Dunces,) under Pretence of our hurting their *Properties*, for correcting their *Errors*, at the ſame Time they injure the honeſt *Properties* and *Improvement* of thoſe buying their *erroneous* and *abſurd* Productions, and cenſure the *Defects* of others with the greateſt Freedom, and find Fault with Books and Authors they do not underſtand.

But, if the Judges of our *Courts of Judicature* were *to grant Informations for correcting the Errors in bad Books and falſe Science*, "what muſt become of all our literary and ſcientific Improvements," as a certain wiſe and learned Judge was pleaſed to obſerve? And do not we ſee the moſt licentious and ſavage *Liberties* taken with Books by the mercenary *Reviewers*, who give *good* or *bad* Characters of Books according as they are feed by the Bookſellers or Authors; often criticiſing Books (ſuch as Mr. *Emerſon*'s) on Subjects they do not underſtand. And what are they able to ſay (without his Judgement) on his *Method of Increments*, or on his Treatiſes of *Mechanics*, *Fluxions*, and other high Subjects? Or what would they be able to ſay on an *Epic Poem*, ſuch as *Milton*'s, if a *Genius* like his were again to ſpring up? Would not *Addiſon*'s Judgement be wanting to ſhew the trifling Defects and to point out the aſtoniſhing and abounding Beauties? While we often ſee *ſpurious Science* recommended by the *Reviewers* for truly *genuine*, when the *Bribe* is not wanting; and do not we ſee *Merit* degraded into the *worſt Stuff*, when it is criticiſed by *Buffoon* and *Proſtitute* Critics! So that an honeſt Author would prefer the *ill* to the *good* Word of Men of no Principles or Honour, as Applauſe from ſuch Men would be infallible *Scandal*; while their *Reproaches* would be interpreted *Applauſe* by the worthy Part of Mankind. — Our Intent is always to do *Juſtice*.

A VINDICATION of CANDID CRITICISM.

SHALL *Error* hope to be *excus'd*,*
Becauſe poor *Authors* are accus'd!
Becauſe Bookſellers are concern'd?
Better thoſe Books of their's be burn'd!
Learn EMERSON's *unerring* Rules,
His Books are fitteſt Books for SCHOOLS.† † *Academies.*
At which let *Hedge*-ROW Authors pine,
And *ill*-DONE ſay thoſe *Rules* are mine.

* *No Converſation or Book is privileged in Defence and Propagation of Error.*

WE having been deceived, and *induced* to recommend *Weſt*'s *Mathematics* and *Fluxions* for a *ſecond Edition*, or a *firſt Edition corrected* and freed from Errors, at a Time when it ſtood charged with *Error* in the *Lady*'s *Diary Prize Queſtion*, *(then unknown to us,)* we ſince corrected the ſame in our *Palladium-Supplement* for 1764. And having alſo as great a Right as the *Diary-Compiler* to correct that *Error*, (notwithſtanding *Weſt*'s *Editor* is ſaid to have taken Offence at it, as well as at the ſaid *Diary-Compiler*, for its having before eſcaped his Notice, though *unpaid* for, when *Weſt*'s Papers were laid before him prior to their Publication, to judge of what the *Editor* was ſuppoſed not to underſtand, as if an Error once eſcaping muſt, for that Reaſon, never be corrected,) we aſked no Leave to do it. We were led into an *Error*, in what we recommended as a *real ſecond* Edition; for we have ſince diſcovered, that the *Errata*, printed in the *firſt Edition*, were cancelled and not corrected in what is *falſly* called the *ſecond Edition*, to make it *really* appear ſo, though altered for the worſe by the *Editor*. Who cancelled *Weſt*'s XXI. *Prop.* as *untrue*, though as demonſtrable as any Propoſition of *Euclid*. (See *Palladium-Supplement* 1764, *for a full and true Account of the whole of this fallacious Affair.)* The Commendation of the *Error* by *Reviewers*, (or *Editor*'s own Commendation ſent to them,) ſhews their Judgement on the *Subject*; whoſe *Praiſe* and *Blame* are of equal Authority and Honour.

So that we having been impoſed on by *fallacious* Pretences and Aſſertions, *(contrary to the Truth of Mathematicians, who ſhould deal only in demonſtrable, inſtead of falſe Propoſitions,)* we therefore relinquiſh our Recommendation of the ſaid *Weſt*'s *Mathematics* and *Fluxions*, *(at P.* 108, *Pall.* 1764,*)* as mutilated from its Original, with the *Defects* and *Improprieties* we have diſcovered and noticed in the *Palladium-Supplement*. And regarding our own *Veracity*, (being impoſed on,) we leave the Book to ſpeak for itſelf, as it ſhall be found *more or leſs* wanting or abounding in *Truth or Error*.

We alſo relinquiſh (for the above Reaſons) our *Recommendation* of a Book of *Fluxions*, at P. 108, *Pall.* 1764, going without the Name of an Author for ſome Time, and ſince allowed by the Rev. Mr. *Weſt* to have a Name different from his ſubſcribed for its Author. This Book of *Fluxions* we leave alſo to ſpeak for itſelf, as it ſhall likewiſe be found more or leſs *abounding or wanting in Truth or Error*.

Thus, if a Gentleman ſhould happen to be deceived in the Characters of other Men, (as well as in Books) he may juſtly leave every Perſon to follow his own Opinion concerning them, when he diſcovers that he is impoſed on, and is at Liberty to relinquiſh his former Sentiments of them.

We find it to be no uncommon or new *Artifice*, among Bookſellers and Authors, to cancel an *old* and print a *new Title* of a Book, with a few additional *Leaves* added, to ſell a *new Edition* of *ſpic-and-ſpan-new Stuff*, when the *old* would not go off! Who thus go on to 3d, 4th, *&c.* Editions.

Nor is the *Artifice* leſs known of *new mapping* a County, on an *enlarged* Scale and Plan, from the beſt *old Maps*, in Vogue. If the *Map-Makers* are idle Fellows,

Fellows, and tired of doing well, they may pretend to take an *actual* Survey of a County, (though requiring a Life Time to be actually and accurately surveyed,) and may set up for *actual* Surveyors, by *actually* driving a *Post-Chaise* fitted with a *Way-Wiser* to measure some of the Roads, and Distances between Gentlemen's *Seats*, where they usually pay due Attendance and Homage, and sometimes are regaled for Encouragement. And it is farther necessary that every *actual Surveyor* should be provided with a surveying *Chain*, to be drawn to and fro between certain *Objects* by two or three of his idle Attendants, living partly, like their Master, out of the Bounty of the Inhabitants. Which being DONE, an ECHO should be propagated of the *Latitudes* taken of several *Eminences* in the same County; with the *exact Levelling* of several Hills loudly proclaimed, and *angular* Distances put down in a Book of the different *Windings* and *Turnings* of *Rivers*, *&c.* will soon establish the Credit of a most accurate *Map-Maker* and *County-Surveyor*, as well as of an Eclipse Cut Maker, and *Astronomer*, if any should chuse to take upon them the Profession of all those eminent Titles!

But after all the *Sweat*, *Bustle*, *Boasts*, *printed Proposals*, and *Publications*, of *circumforaneous* County-Surveyors, when they have finished their large-sized *Map*, principally from *old Surveys*, and partly by referring them to a few of their *new Observations*, as soon as the *Map-Engraver* (whoever he may be) has made the Surveyor pay handsomely for engraving his *enlarged Plan* of the County (never to be put upon the *Fool's Shelf*) a *Price* that his Maps are never likely to return him the Money for, he [*Mr. Engraver*] has it absolutely in his Power to reduce the *whole* of Mr. *actual Surveyor*'s Labour into a small and more *useful Compass*, (such an one as he was at Liberty first to take the *actual* Survey of a County from and transfer it to his *enlarged Plan*); and then he may call it his own Survey from Persons produced to affirm they were *actually* employed to survey it for the *Engraver* after it was surveyed by the *actual Surveyor*, so as to reduce it for his own Profit only. And if the *actual* Surveyor be not a sharp and clever Fellow, it is *Ten to One* but the Engraver may find Means to transfer the *original Plates* also to his own Property, (after the Surveyor has established his *Fame* by the Sale of Part of the Impression,) and at a *Price* worth his Acceptance, and paying for, pretended purely to serve Mr. County-Surveyor. Which Gentleman by this Time is supposed to be pretty well tired of his new *Scheme*, and exhausted in his Pocket, if not sunk by some Hundreds in his *Finances*. So that *Repentance* sometimes waiting on a County Surveyor too late, he, in vain, wishes himself re-established in his former Occupation (sometimes that of a Country *Schoolmaster*) that has now quite turned its Back on him, for having forsaken his *Wife* PRUDENCE to follow *Idleness*, *Indiscretion*, *Ambition* (of being a Map-Author,) *Folly*, and *Madness*!

Thus Mr. *actual County Surveyor* sometimes *outschemes* himself, like other Authors and Schemers for the Public, through a mistaken Judgement and misguided *Ambition*!

N. B. *We shall continue to give other Remedies for Ignorance, Vanity, and Error, gratis.*

The DOCTRINES *of* MORALITY, *or* PRINCIPLES, RULES, *and* DEMONSTRATIONS, *concerning the* CONDUCT *and* HAPPINESS *of* HUMAN LIFE.

DEFINITIONS.

1. THOSE *Actions* productive of *Pain* or *Misery* to Mankind are called *Evil*; under which Name or Distinction are reckoned all the *Vices*.

2. Those *Actions* productive of *Pleasure* or *Happiness* to Mankind are called *Good*; under which Name or Distinction are reckoned all the *Virtues*.

Of HUMAN LIBERTY.

SINCE every Man from his Experience is at *Liberty* in his *Will* (which is governed by his Underſtanding) to act, or forbear any Action, the *Happineſs* or *Miſery* of his Life, depending thereon, is wholly in his own Power, according to his own right or wrong *Conduct*. For if Man's Will were under external Influence, and not entirely in his own Power or Underſtanding to direct it, he could neither be capable of *Vice* or *Virtue*, or culpable or laudable for any Thing he did.

It is therefore in the *Liberty* of Man's Will, to act or forbear any Action, that all Vice and Virtue conſiſts. For a *Madman* or an *Idiot* (void of Underſtanding to govern his Will) is never looked on to be culpable or commendable, puniſhable or meritorious, for what he does, with Reſpect to himſelf or his Fellow Beings. But ſuch a Perſon is conſidered as acting by *Chance*, or accidentally, and not with any premeditated or deliberate bad or good Deſign, having not the Liberty of his Will, in which the *Demerit* or *Merit* of all human Action conſiſts.

Of FRIENDS *or* ENEMIES *to the* PUBLIC.

He that publicly points out and demonſtrates any *Irregularity* or *Error* in the Conduct of Life, is a Friend to the Public, or Promoter of its Happineſs.

He that publickly promotes Error or Irregularity in the Conduct of Life, by ill Precepts or Example is an *Enemy* to the public Happineſs.

He that acts indifferently in his Station is like a *defective Wheel* in a noble *Machine*, unworthy of Benefits ariſing from his Connections. And though it is better not to act at all than to act hurtfully, yet it is forfeiting our Duty not to do Good when we can.

There are Truths in the *moral Conduct* of Life, reſpecting Man's own Happineſs, as he ſtands related to *God*, *Himſelf*, his *Family*, *Friends*, and *Society*, (for Man was created and lives to be happy, *if he will*,) therefore he that of himſelf cannot attain a ſufficient Knowledge of neceſſary Truths for the Buſineſs of his Happineſs, muſt apply himſelf to an able Inſtructor for his *Guide*. As there are many uſeful Truths derived from unerring Principles and demonſtrative Reaſoning, the common People are obliged to ſeek the Knowledge of from the *Mathematicians*, to anſwer the many good Ends and Purpoſes of Life.

But the eſtabliſhed *Rules of Religion*, as the *Commands* of GOD, are at Hand, and are not to be diſputed, any more than the Commands of a Monarch or General; which to do would be ſubverſive of all Duty, Order, and Government, by Breach of *Subordination*. The *divine Rules* are more influencing than thoſe of Morality, or of Men, *(though never ſo well demonſtrated,)* as they only bear the Authority of human Reaſon: Which Particle or Ray of the divine Nature in Man, however, reſembles the Perfection of GOD who gave it.

In a Treatiſe of *Morality*, intitled *Woolaſton's* RELIGION OF NATURE DELINEATED, we find, *Diſtinctions* of *moral Good and Evil*; of *Man's Happineſs*; of *Reaſon* and *the Ways of diſcovering Truth*; of the *Obligations of imperfect Beings, with Reſpect to their Power of acting*; *Truths* relating to the *Deity*, concerning his *Exiſtence*, *Perfection*, *Providence*, and other *Attributes*; *Truths* reſpecting *Mankind* in general, antecedent to all *human Laws*; *Truths* reſpecting particular *Societies* of Men, or Governments; *Truths* concerning *Families* and *Relations*; *Truths* belonging to a *private Man*, and reſpecting *(directly)* only himſelf: All finely reaſoned and demonſtrated, but not deſigned for the common People

People to underſtand, any more than mathematical Problems and Propoſitions, their Solutions and Demonſtrations. A *Specimen* of which *moral Propoſitions* we have exhibited farther on for the Uſe of moral Reaſoners.

The *People* in general muſt be guided by *Religion*, and thoſe Precepts and Rules for the Conduct of human Life to be met with in the BIBLE; which may be denominated the divine *Principia*, or CLASSIC of HUMAN HAPPINESS. The *trifling* Objections raiſed againſt that religious *Claſſic*, by thoſe who might well employ their Times better, the *Wits* and *Diſturbers* of Government, will never be able to overturn its *Doctrines*, ſo plainly intended for promoting the Welfare and Happineſs of a *Community*. So that when any Man has got juſt as much *Wit*, as will ſerve him to raiſe Diſputes againſt the eſtabliſhed Religion, and to contradict its wholeſome Precepts and eſtabliſhed Doctrines, we are from thence aſſured of the Size, the Depth, and Worth, of his *Underſtanding*; *Enthuſiaſm* and *Superſtition* being here out of the Queſtion.

Theſe Diſputes concerning *natural Religion* have ariſen among the *Moraliſts*, which, being of a high and important Nature, we ſhall, to ſatisfy the *Curious*, give them (with a little Improvement) from *Woolaſton's Religion of Nature delineated*.

1. *Whether there be really ſuch a Thing as* natural Religion, *properly ſo called?*

2. *If there be, what it is?*

3. *How may a Man qualify himſelf, ſo as to be able to judge, for himſelf, of the* other *Religions profeſſed in the World, to ſettle his own Opinion in diſputable Matters? and then to enjoy Tranquility of Mind; neither diſturbing others, nor being diſturbed, at what paſſes among them.*

Of Moral GOOD *and* EVIL. *According to* Woolaſton's Religion of Nature.

THE Foundation of *Religion* lies in that Difference between the *Acts of Men* which diſtinguiſhes them into *Good, Evil*, and *Indifferent:* For, if there be ſuch a Difference, there muſt be a Religion, and the contrary. Upon which Account it is, that ſuch a long and laborious Enquiry has been made after ſome general *Idea*, or ſome *Rule*, by which comparing the aforeſaid Acts, it might appear to which Kind they reſpectively belong. And though Men have not yet agreed upon any *one Rule*, yet one there certainly is, which is here propoſed.

PROP. I. *That Act which may be denominated morally* good *or* evil *muſt be the* Act of a Being *capable of diſtinguiſhing, chuſing, and acting, for himſelf, or an Act of an intelligent free Agent.*

Becauſe *no Act* can be aſcribed to that, not endued with theſe Capacities. For that which cannot chuſe, and has not the Opportunity or Liberty of chuſing for itſelf, and of ſeeing accordingly, from an *internal* Principle, acts, if at all, under a *Neceſſity, ab extra*, from without. But that which thus acts is in Reality only an Inſtrument in the Hand which impoſes the *Neceſſity*, and cannot properly be ſaid *to act*, but *to be acted upon*. The Act muſt be the Act of an *Agent*; therefore not of his Inſtrument. A *Being* under the above-mentioned *Inabilities* is, as to the *Morality* of his Act, in the State of inert and paſſive Manner, and can be but a *Machine*, without Will and Freedom of Action, and therefore incapable of Morality.

DEFINITION.

Thoſe Propoſitions are true expreſſing Things as they are: Or Truth is the Conformity of thoſe Words or Signs to the Things themſelves, by which they are denoted.

PROP.

PROP. II. *A true Propoſition may be denied, or Things may be denied to be what they are by Acts or Deeds, as well as by expreſs Words, in a Propoſition.*

It is evident there is a Meaning in many *Acts and Geſtures*; ſuch as in *weeping, laughing, ſhrugging, frowning, &c.* Applications are ſometimes made, and a Kind of *Dialogue* maintained, by the Caſts of the *Eye*, and Motion of the *geſticular* Muſcles. We read of *Feet* that ſpoke; and of a Philoſopher who anſwered an *Argument* by getting up and walking about; and of *another* who pretended to expreſs the ſame Sentence as many Ways by *Geſticulation*, as *Cicero* could do by all his abounding Eloquence. But there are *Acts* of other Kinds, conſtituting the Character of a *Man's Conduct* in Life, which have in Nature, and would be underſtood by an indifferent Judge to have, a real Signification; or to imply ſome real *Propoſition*, as plainly, as one that is put down or ſpoke in Words. Therefore, if what ſuch *Acts evidently declare* be contradicted, it muſt be a Contradiction of the *Truth*, as much as any *falſe Propoſition* or Aſſertion whatſoever can be.

PROP. III. *No Act (whether of Word or Deed) of any Being, to whom moral Good and Evil are attributed or imputable, interfering with any true Propoſition, or denying any Thing to be as it is, can be right.*

For, if that *Propoſition* which is falſe, be ſo, or wrong, that *Act* which implies ſuch a *Propoſition*, or is founded in it, cannot be *right*; becauſe it is the very falſe Propoſition put in Practice.

And thoſe *Propoſitions* which are true, and expreſs Things as they are, expreſs the proper *Relation* between the *Subject* and the *Attribute*, *as it is*; either affirmed or denied thereby according to the Nature of that *Relation*. And this Relation *(or its Nature)* is determined and *fixed* by the Nature of the Things themſelves. Therefore Nothing can interfere with *any Propoſition that is true*, but it muſt likewiſe interfere with its *Nature*, Nature of Relation, and of Things, and conſequently muſt be *unnatural*, or wrong in Nature. So very much do thoſe Gentlemen miſtake, who, following Nature, mean only to comply with their bodily *Inclinations*, though in Oppoſition to Truth, or without Regard to it. Truth is but a Conformity to *Nature*; to follow her cannot be to oppoſe Truth.

If there be a *Supreme Being*, upon whom the Exiſtence of the World depends, *(and that there is all Nature cries aloud!)* and Nothing can be, but what he either cauſes or permits to be, then to own Things *to be as they are*, is to own what he cauſes or permits *to be thus cauſed or permitted*, which is to take Things as he gives them, to go into, and agree with, his *Conſtitution of the World*, and to ſubmit to his *Will* revealed in the *Book of Nature*. To do which therefore muſt be *agreeable to his Will*. And if ſo, to do *contrary* muſt be diſagreeable to it: And eſpecially, as we ſhall quickly find there is a *perfect Rectitude* in his Will, to do contrary is certainly to do *wrong*.

This muſt not be underſtood in Reſpect to the Actions of wicked Men. It is not agreeable, that when *Ill* is done by them, that *it ſhould be ſo done*, or that they ſhould make an *ill Uſe of their Liberty*. But when they have done this, and committed *Evil*, it is agreeable to his *Will* that we ſhould allow it to *have been* committed; ſince it would be diſagreeable to his Will that we ſhould *deny the Fact*.

Since the *owning of Things to be as they are*, in all our Conduct, is direct Obedience to GOD, ſo the contrary, or diſowning Things *to be*, or *to have been*, as *they are*, *or have been*, contrary to what they are, is direct Violation of Truth and Rebellion againſt the *Author of Nature*. It would be as much as to ſay, '*God cauſes ſuch a Thing to be, or permits it*; *or the Relation between this and that*

'*is*

'it of such a Nature, that one may be affirmed of the other, &c. which is true; 'but yet some will not admit to be so; yet act as if it were so.' They pretend the *Laws* of Nature are ill framed, not regarding them; even *Existence*, with them, shall be *Nonexistence*, when their Pleasure asserts it. Such an impious Declaration is a *voluntary* Breach of Truth.

Things cannot with Propriety be denied to be as they are, in any *Instance* whatsoever, without Contradiction to self-evident *Axioms* and eternal Truths.

To put *bitter* for *sweet*, *Darkness* for *Light*, *crooked* for *strait*, *&c.* is subversive of all Science, and renouncing all Sense and *Consciousness* of Truth, and flatly denying the *Consciousness* we have of the *Existence of any Thing*.

To deny *Things to be as they are* is a Transgression of the great *Law of Nature*, the Law of *Consciousness* and Reason. For *Truth* cannot be opposed without Violence to Reason; and the Nature and Force of Truth is *amiable*.

If we were to judge by what we feel in ourselves, the least Truth in Nature cannot be contradicted without much Reluctance and Offence to the Mind; and to see others disregard it is not only displeasing, but shocking! — See *Woolaston's Religion of Nature* for the Rest.

COROLLARY.

Hence a *Lie*, in Prejudice of another, is one of the *greatest* Crimes, and a *Liar* one of the greatest Criminals; because a *Lie* is a false Representation of God's Truth, and a *Liar* a false *Representer*; whether in speaking or acting a *Lie*, or the Thing which is not.

SCHOLIUM.

All the *Vices* are *Lies*, and all the *Virtues* are *Truths*; whether they are represented by the Words or Actions of the Representer.

PLATO's MAXIMS.

1. *Not to give one's Assent but to evident and certain* Truths, *and to disengage one's Mind from all Kinds of Prejudice.*

2. *Never to attempt to handle* Questions *which are impossible to be decided.*

3. *To distinguish well between what we* know, *and what we are* ignorant of; *and not to* believe *we know what we do not understand.*

OBSERVATION.

Hence, Plato knew there were certain *Truths*, and such *Principles* as might be termed *Dogmata*. For while he doubted many Things, he affirmed some to be absolutely *true*. He entirely followed *Socrates's* Manner of disputing, and avoided the decisive Air of *Sophists* and *Dogmatists*, who affirmed any Thing, even *bare* Probability for Truth.

PLATO's DIVINE DOCTRINES.

Plato taught NATURAL PHILOSOPHY regarding *Speculation*, MORALITY regarding *Action*, and DIALECTIC regarding both, and the Distinctions of Truth; comprehending a perfect *System* of *Knowledge* and *true Happiness*.

The Perfection of MORALITY he makes to consist in living conformable to *Nature*, or the *Will* of the DIVINE BEING, Author of all sovereign *Good*. The Scope of all human Desires being to obtain every Thing of *God* necessary for *Soul* and *Body*, in our present and future State.

Thus *Happiness*, or *Good*, he divides into *divine* and *human*.

The

The *human Good* concerns what we ought to attain for the preſent State of our Being; being the *Goods* of Body and of Life. The *Goods of Body* are *Health, Beauty, Good Humour, Strength, &c.* The *Goods of Life* are *Friends, Riches*, and every Thing that employs and advances Virtue.

A Man is not born for himſelf alone, but is united to all other Men by *Society*, that renders him a Member of *one and the ſame Body*; to the Advantage of which all his Thoughts and Actions ought to refer.

Divine Goods are thoſe of the *Soul*, or every Thing which renders it capable of *knowing, improving, loving*, and of *embracing*, that which is *amiable, lovely, &c.*

Plato enumerates *Prudence, Temperance, Juſtice*, and *Valour*, among the principal Virtues.

He makes the *Happineſs* of Life *principally* to conſiſt in *Virtue*; which Happineſs is rendered complete when the *Goods* of the Body, and thoſe neceſſary for the Promotion of *Virtue*, are joined. Whence ariſes an indiſpenſible *Obligation* to *Labour*, for filling up the *Duties* of Life impoſed by Nature. Which *Obligation* engages us to avoid *Idleneſs* and *criminal* Pleaſures; neceſſarily binding us to endure all Sorts of *Labour*, with *Pain*, to obtain that which is juſt and honeſt. Whence *Friendſhip, Juſtice*, and *Equity*, reſult, preferable to all other Pleaſures and Advantages of Life.

Plato every where inculcates a diſintereſted Frame or Diſpoſition of Mind, and the Contempt of *Riches*.

Teaches to *poſtpone* all the Gold in the World, unjuſtly applied, to the *leaſt Virtue* or ſovereign Good.

He prompts Men to expoſe themſelves to Death, in the Defence of *Juſtice*, and in the Maintenance of *Laws, Order*, and the *public Good*: (Can *Religion* teach more?) Who would have us avoid not only all *criminal* Pleaſures, but *Delicacy, Idleneſs*, and too much *Sleep*.

His *Precepts* are full of *Truth, Chaſtity, Temperance, Modeſty, Patience*, and *Humility*; accompanied with *Proofs* of their *ſovereign* Good to Mankind. Who utterly overthrows the Principles of *ill Morals*, after he has propoſed and ſhewn them in their full Strength; and does it in ſuch Reaſoning as is truly worthy a great Philoſopher. That almoſt every Thing in *Plato*'s Doctrine nearly amounts to *Chriſtianity* itſelf. Which divine Author ſpeaks largely of the Duty and Honour due to Parents.

The Way of honouring Parents duly, he ſays, *is to love them more than our* Children, *or even* ourſelves.

Theſe Arguments of this great Philoſopher in the *dark Ages of Idolatry* are great Proofs of the Rectitude of *filial Duty* here recommended, and of *Chriſtianity*'s being then near its Birth, with which *Plato*'s Doctrines now ſo exactly correſpond.

Plato maintains that no *Injury* ſhould be offered to any Man, not ſo much as to him who has dealt injuriouſly with us. Who makes it appear, that to introduce this *Maxim* into civil Converſation, *that it is lawful for a Man to revenge himſelf, and render Evil for Evil*, is to pretend to lay a Foundation for *Juſtice* in innumerable Acts of *Injuſtice*; and to open an inexhauſtible Source of *Crimes* and Acts of *Violence*: *(Exactly correſponding with the Doctrines of the divine* Socrates, *and agreeable to the Doctrines of Chriſtianity.)* Who goes on to ſay — What *Bank* would be ſtrong enough to ſtop ſuch an Inundation of Wickedneſs? and where would the *Injury* and *Miſchief* of *Revenge* end? He carried his Arguments againſt *Revenge* ſo far, as to maintain, that he who revenges an *Injury* is a greater

greater Criminal than he that commits it; whilſt Remedies of Juſtice are allowed for all Sorts of Crimes.

Plato teaches the *Neceſſity of Prayer*. Who ſays, if a Man has any Degree of *Wiſdom*, he will venture upon no hazardous or good Undertaking without the *Invocation* of the *divine Being* for his Succeſs.

The antient *Pythagoras* uſed to thus inculcate this Doctrine: '*Begin all thy Actions with Prayer, that thou mayeſt be able to accompliſh them.*'

Plato ſays, that Men are ſo blinded by their *Paſſions*, that they know not *how to pray well*, unleſs *God* inſtructs them; and therefore the *trueſt Prayer*, and that which alone can be agreeable to God, is to requeſt of him *to perform his own Will in us, and not ours.*

The moſt conſiderable Thing in *Morality*, *Plato* ſhews, is the *political* Part of it; the true Uſe of which he endeavours to demonſtrate, and to eſtabliſh *this Part of Morality* in that *Perfection* from whence it fell by the Corruption of Men.

In the Time of this *Philoſopher*, *Injuſtice* had overturned all the States of *Greece*, ſo that not one Government was left that deſerved to be approved. *Plato*, againſt this Diſorder, gave a perfect Model of a moſt juſt Form of Government, that all States might correct the *Vices* in their Government by his Pattern. For which Purpoſe he employs his Books of a *Commonwealth* and thoſe of *Laws*, in which he, after a wonderful Manner, reconciles *Policy* to *Religion*; the latter being the Baſis of the former.

He ſhews that *Princes* and *Governors* of States can never conduct the People well, but by imitating the KING of KINGS, the ſovereign Lord of the Univerſe, and only perfect Model of all *Wiſdom* and *Juſtice*. For (he ſays) as a *Sheep* is not capable of guiding the whole Flock, which ought to be under the Conduct of a *Shepherd*, ſo one Man is not capable of conducting others, who all ought to be ſubject to God.

Plato gives admirable *Precepts* for the Eſtabliſhment of Prieſts and Magiſtrates. He would not have them choſen for their *Birth*, *Riches*, *Credit*, or *Power*, but for their Piety and Merit only. Thoſe are the beſt *(ſays he)* who yield the greateſt Obedience to the *Laws*, and excel all the Reſt of their Fellow Citizens in that Reſpect, *&c.*

He ſhews that the *monarchical* is the moſt perfect Form of all Governments; becauſe it approaches neareſt to the firſt Model; but that the Power of it ought to be limited by the *Law*, which is to govern as the *ſupreme Reaſon*.

After having ſhewn the *Good* and *Evil* of all known Governments, he maintains that all political Schemes will tend to render the *Ruler* powerful to the Detriment of the *Subject*, and which makes all the Virtue of the Sovereign to conſiſt in confirming and augmenting his Power, leaving *Juſtice*, *Patience*, *Goodneſs*, *Fidelity*, and *Humanity*, as Virtues only becoming *Slaves*; this is no better than open Tyranny. That the End of all true *Policy* is to make all the Members of a Community live together in Society like ſo many Brothers after the moſt happy Manner that can be, without either Poverty or very great Riches, according to the Rules of Piety and Juſtice; and to engage Princes to employ Men according to the different Talents they diſcern them fit for. — Now and then introducing *ſatyrical Fables* on Government, not neceſſary here to be quoted.

His Treatiſe of *Policy* is full of admirable *Maxims*, and ſuch as are worthy to be engraved on the Hearts of Mankind. There is only one conſiderable Defect in his *Politics*, in taking away *Meum* and *Tuum* from the Government which he forms; inſtituting a *Community*, not only of *Eſtates*, but alſo of Women and

Children. Which Notion was not entirely *chimerical*, but had been partly put in Practice among the *Lacedemonians* and ſome other Nations; but does not excuſe it from being a *vicious* Uſage; ſince no Authority of Cuſtom can render that *good*, which is in its own Nature *evil*. This *Community* of Things and Perſons cannot conduct this *Lawgiver* to the End he propoſes; but, on the contrary, ſets him at a greater Diſtance from it, and makes him loſe the Advantage of all he had before eſtabliſhed. For inſtead of uniting his Citizens, this *Community* divides them, by breaking aſunder all Relations, and all the moſt ſacred Ties of Nature, and trampling on Laws and Religion, Honour and Decency. Before the *Chriſtians* ſhewed their Indignation againſt a *Maxim* ſo full of *Wickedneſs* and *Error*, the *Pagans* diſcerned the Falſhood of it: For *Ariſtotle* attacks it in the 2d Book of his *Politics*. Nay, *Plato* himſelf abandons it in his *6th Book of Laws*, where he reſtores all that Honour to Marriage of which he had before diveſted it.

Plato goes on, and forms his *wiſe Man* after the Model of *Moſes*, giving an amazingly great *Idea* of his *Philoſopher*. He founds his Religion on Revelation, eſtabliſhed by Tradition and antient Oracles.

He teaches the Belief of *one God*, who is infinitely good, loves Mankind, and is willing to render them happy; and who, as he is alſo infinitely juſt, makes none happy but thoſe who reſemble him, and puniſhes ſuch as diſhonour the ſacred Character he has imprinted on them.

He forbids domeſtic Chapels and Altars. Then he deſcribes *what God is*, in this wonderful Manner.

GOD (ſays he) *is one eternal, immutable, incomprehenſible Being. He created and diſpoſed all Things by his Wiſdom; he maintains and preſerves all Things by his Providence; he is in all Places, and no Place can contain him. He is all Things; and yet he is none of thoſe Things which are by him, and have received their Being from him. For he is greater than Eſſence itſelf. He ſees all Things, knows all Things, and penetrates the moſt ſecret Thoughts; he fills the Capacity of the Deeps, and the Immenſity of the Heavens; all Knowledge, Good, Virtue, Light, Life, are only in him, and are himſelf. He is at the ſame Time infinitely good and infinitely juſt. He loves Men with a ſingular Affection, and created them only to render them happy: But as he is Holineſs and Juſtice itſelf, he makes none happy but thoſe who reſemble him in Righteouſneſs and Holineſs; and puniſhes thoſe who had corrupted the ſacred Character he had impreſſed on them, by creating them after his own Image.*

He ſhews of what Importance it is to regulate *Plays*, and what the *Pleaſures* of the People ought to be; deſcribing the pernicious Conſequence of corrupt Plays.

He would have Judges eſtabliſhed to judge of Plays; and appointed, in the ſame *Book of Laws*, Judges to judge of *Fables*, to hinder Corruption. He judges proper *Comedies* neceſſary. Who treats the Buſineſs of *Plays* and *Shews* thoroughly, as a Mattter of great Importance to a State. — *For other curious Matters we refer the Reader to his Works.*

Farther RULES *of the true* OECONOMY *in the* CONDUCT *and* HAPPINESS *of* HUMAN LIFE.

Extracted from the beſt Authors, who extracted them from Others.

INTRODUCTION.

1. ALL Things, their Order and Beauty, proceed from GOD. Whoſe Power, Wiſdom, and Goodneſs, are unbounded. His Mind is the Fountain of Truth.

2.

2. He created Man, whoſe Station on Earth is by his Appointment, and the Powers of whoſe Mind are his Gifts, and the Wonders of whoſe Frame are his Works.

I. *The* DUTIES *of* MAN *conſidered as an* INDIVIDUAL.

CONSIDERATION 1. Man muſt contemplate his Powers, Wants, and Connections, to diſcover his Duty. Who is not to ſpeak or act without weighing his Words and conſidering the Tendency of his Actions: Otherwiſe Repentance may follow.

2. As one, that haſtily and without Precaution leaps over a *Fence*, may fall into a *Pit*, yet *unperceived*; ſo is he that plunges ſuddenly into Action without conſidering the Conſequence.

3. Hearken therefore to the *Voice* of *Conſideration*.

MODESTY. 1. The firſt Step to Wiſdom is for Man to conſider himſelf ignorant, and never to ſeem to be wiſe in his own Conceit.

2. As a *plain Dreſs* beſt adorns a beautiful *Woman*, ſo Decency in Behaviour is a great Ornament.

3. The Speech of *Modeſty* adds Luſtre to Truth; and *Diffidence* of Speech is an Excuſe for *Error*.

4. Rely not on your own *Wiſdom*, but take the Counſel of Friends.

5. Be not fond of your own Applauſe; but endeavour to excel others, and to diſcover your own Imperfections.

6. *Modeſty* ſets off Virtue, as a Veil ſets off Beauty.

7. The Vain and Arrogant court Obſervation, aſſuming Superiority with *Inſolence*; while the Wiſe and Worthy look down on their Pride and Conceit with Deriſion.

8. The Vain greedily ſwallow their own Praiſe, while the Flatterers eat them up.

APPLICATION. 1. As the Days that are paſſed are gone, and thoſe which are to come may never arrive, the *preſent Time* is only ours; to make the beſt Uſe of which, without Delay, is human Prudence and Wiſdom.

2. *Idleneſs* is the Parent of Want and Pain; but *Labour* is the Parent of Virtue and Pleaſure.

3. *Diligence* defeats Want; and Succeſs and Proſperity commonly attend the induſtrious.

4. To exerciſe the Mind with Contemplation, and the Body with Action, is to preſerve the Health of both.

5. The Man of Sloth and Idleneſs is burthenſome to himſelf; he leaves no Mark of Remembrance behind him.

6. He is diſeaſed for Want of Action; and his Mind is overrun with *Ignorance* and *Vice*, as a Piece of Ground is overrun with *Weeds* for Want of Cultivation.

7. In the idle Man's Houſe dwell *Riot* and *Diſorder*; and *Ruin*, *Shame*, and *Repentance*, are his *Attendants*.

EMULATION 1. Exalt thyſelf to Something that is *praiſe-worthy*, if thou wouldſt be eſteemed.

2. The Oak now ſpreading its Branches to the Heavens, was once but a ſmall *Acorn*.

3. Let None go before you in *well-doing*; envy not the Merit of others, but improve yourſelf.

4. Raiſe yourſelf above another by excelling him; and thy Superiority and Succeſs ſhall be crowned with *Honour*.

5. A *virtuous Emulation* riſes, like the *Palm-Tree*, above the Power of *Oppreſſion*; as Eagles ſoar aloft with their Eyes fixed upon the *Sun*.

6. The *Examples* of eminent Men are a Pattern for Others.

7. Envy is a Bitterneſs and Scourge to the Poſſeſſor.

8. The envious Man feels no Benevolence in his own Breaſt, and therefore he believes no Kindneſs to be in the Breaſts of others.

9. He is cruſhed like a *Spider* in his own *Web*, whilſt he is ſetting Traps for his Neighbours.

PRUDENCE. 1. Is the Guide to human Happineſs.

2. Take Heed leſt your own Words deſtroy your Peace.

3. Whoever ſpeaks ill of another *perſonally*, is liable to hear of his own Faults with *Shame*.

4. In *Silence* is Safety, but in much ſpeaking Repentance.

5. A talkative Perſon is a *Nuiſance* to Society; the Ear is tired of his Prating; the *Chatter* of his Words confounds Improvement.

6. *Boaſting* produces Contempt, and the perſonal Deriſion of others, Hatred.

7. A bitter *Jeſt* is a Poiſon to Friendſhip.

8. *Frugality* is the Parent of Prudence and Happineſs.

9. Extravagance, Avarice, or Folly, is the Parent of *Misfortune* and *Evil*.

10. Aſſiduouſly engage in your own Affairs, and leave the *State* to its proper Governors.

11. *Expenſive* Pleaſures exceed the Worth of their Enjoyment.

12. *Indulgence* in Superfluities of Life leads to the Want of its Neceſſaries.

13. *Proſperity* ſhould not reject *Caution*, nor *Abundance* diſdain *Frugality*.

14. Truſt no Man till you have tried and proved him. Miſtruſt no Man without Reaſon; it is uncharitable.

15. An *honeſt* Man, when *proved*, is a *Jewel* of ineſtimable Value.

16. Accept not the Favours of the *Mercenary*; and make no Friendſhip with the Profligate, or Men of *ill Principles*; they are dangerous to your Happineſs.

17. Leave not any Thing to *Hazard* which Foreſight can provide for or Caution prevent.

18. Learn *Wiſdom* from Experience: By the Miſtakes of Others let your own Errors be corrected.

19. Succeſs generally, but not always, attends on *Prudence*.

FORTITUDE. 1. Perils, Misfortune, Want, Pain, and Injury, are the Lot of all Men; againſt which fortify your Mind with *Patience* and *Courage*.

2. A *noble Spirit* is not captivated with the Smiles, or depreſſed with the Frowns, of Fortune.

3. The Man of *Fortitude* is as unſhaken as a Rock when the Waves of Fortune beat againſt him.

4. His Head is lifted like a *Watch-Tower*, his Heart ſuſtains him in Time of Danger, and the Arrows of Fortune fall at his Feet.

5. He meets the Evils of Life undaunted, and returns with Victory.

6. Calmneſs alleviates the Weight of Misfortune, and Conſtancy ſurmounts them.

7. A daſtardly Spirit betrays to Shame.

8. Shrinking under Poverty is ſtooping to *Meanneſs*.

9. Tamely ſuffering Inſults is inviting Injuries.

10. As a Reed is ſhaken, ſo the Shadow of Evil makes ſome afraid.

11. In *Danger* ſome are embarraſſed, and ſink in Misfortune with Deſpair.

CONTENTMENT. 1. The Wiſdom of *God* denies the unprofitable Requeſts of Man; yet for all reaſonable Deſires and honeſt Endeavours has eſtabliſhed a Proſpect of Succeſs.

2.

2. From *Folly*, *Pride*, and a diſtempered *Fancy*, proceed many Misfortunes complained of.

3. *Wealth*, *Power*, and *Leiſure*, bring their peculiar and reſpective Inconveniences.

4. The *poor Man* ſees not the Anxieties of the *Rich*, and feels not the Difficulties of Power, nor knows the Fatigues of Leiſure; and therefore he repines at his Lot.

5. Appearance of Happineſs is ſometimes great Grief.

6. Cares increaſe with Riches, but Contentment is a continual Feaſt.

7. Riches cannot make you unhappy, if Juſtice, Temperance, Charity, and Modeſty, are not on your ſide.

9. The Cup of *Felicity*, pure and unmixed, is not a Draught for mortal Men.

10. Virtue is the Race, and Happineſs the Goal.

TEMPERANCE. 1. Health, Wiſdom, and Peace of Mind, are the Fruits of Temperance and Exerciſe.

2. Shun Idleneſs, the Allurements of voluptuous Pleaſures.

3. Diſeaſes, Diſquiet, and Death, wait upon Luxury, Lazineſs, and Intemperance.

4. Short Hours of Jollity and Riot are followed with long Intervals of Dejection and Pain; a juſt and natural Conſequence to thoſe who abuſe the Gifts of God.

5. The Roſe bluſhes on the Cheek of *Health*, the Sweetneſs of the Morn breathes from her Lips; Joy, tempered with Innocence and Modeſty, ſparkles in her Eyes; ſhe ſings as ſhe walks, from the Chearfulneſs of her Heart.

6. *Health* is the Daughter of *Exerciſe*, who begot her on *Temperance*. Their Sons inhabit the *Northern Regions*.

7. They are brave, active, ſtrong, and lively, and partake of their Siſter's Virtues.

8. Their Father's Employments excite their Appetites, and their Mother's Repaſts refreſh them.

9. To combat the *Paſſions*, and conquer evil Habits, is the Delight of theſe wiſe Children.

10. Their Pleaſures are moderate, and therefore long; and their Repoſe is ſhort and undiſturbed.

11. Their Blood is pure, and their Minds are ſerene.

12. But their Health, Strength, Beauty, and Activity, are expoſed to the Temptations and Dangers of *laſcivious Love!* — From whoſe Snares and Allurements ſpread abroad they ſhould fly with all poſſible Endeavours, as Danger that is followed with *Diſeaſes*, *Sorrow*, *Want*, *Care*, *Shame*, and *Repentance*.

II. *Of the* PASSIONS.

HOPE *and* FEAR. 1. The *Promiſes* of *Hope* are ſweeter than *Roſes* in the Bud; but the Threatenings of *Fear* are a Terror to the Mind.

2. Let not *Hope* or *Fear* deter you from doing what is right; but meet all Events with an equal Mind.

3. In all reaſonable Undertakings let thy Endeavours be animated with Hopes of Succeſs.

4. Be not terrified with vain Fears, nor ſink your Spirits with the *Phantom* of Imagination.

5. From falſe *Fear* proceeds Misfortune; but by *Hope* comes Help.

6. As the *Oſtrich* purſued hides his Head, forgetting his Body, ſo *Fear* and *Cowardice* expoſe to Danger.

7.

7. *Perſeverance* overcomes all Difficulties; but Doubt of Succeſs brings Diſappointment.

8. *Vain Hope* flatters the *Weak*; but the *Wiſe* will not purſue it.

9. Let *Reaſon* preſide over your *Hopes*, that they exceed not the Bounds of *Probability*; and Diſappointment ſhall be kept afar off.

JOY *and* GRIEF. 1. Let not your *Mirth* intoxicate, nor your *Grief* depreſs your Mind. No preſent Good is ſo tranſporting, nor Evil ſo dejecting, as to require us to riſe or ſink far above or below Moderation.

2. The *Houſe of Joy* (painted gay on the outſide) is a Houſe of Noiſe and Exultation. wherein dwell the Sons and Daughters of *Madneſs* and *Folly!*

3. The *Houſe of Grief* (overſhadowed with Trees and hid from the Sight) is a Houſe of Miſery and Deſpair, wherein dwell the Sons and Daughters of *Sadneſs* and imaginary *Affliction!*

4. *Riot* and *Exceſs*, *Dangers*, *Miſchiefs*, and *Evils*, meet in the *Houſe of Joy*.

5. *Sighs*, *Lamentations*, *Complaints*, *Weepings*, *Weakneſs*, and *Melancholy*, meet in the *Houſe of Grief*.

6. Avoid the Habitation of *Grief*; her Breath is contagious, blaſts and withers the Fruits and Flowers that adorn and ſweeten the Garden of Life.

7. Equally avoid the Houſe of *Joy* and of *Grief*; and purſue the *middle Way*, leading by a gentle Aſcent to the *Bower of Contentment*, wherein dwell *Peace*, *Safety*, and *Tranquility*.

8. *Contentment* is always chearful, but not gay; ſerious, but not dull; and ſees the Joys and Sorrows of Life with Steadineſs and Serenity of Mind.

9. Thus conducted to the Bower of *Contentment*, you may, as from an *Eminence*, look down with Pity on the riotous Follies and melancholy Miſeries of Life!

10. Theſe are the Attendants of thoſe who purſue *Follities* and *Exceſſes*; and of thoſe who ſpend their Days in complaining of the Woes and Calamities of Life: By whoſe *Errors* you are admoniſhed to keep from going aſtray.

ANGER. 1. As the *Whirlwind*, tearing up Trees, and deforming the Face of Nature in its Fury, or as an *Earthquake*, ſhaking or overturning Cities in its Convulſions, ſo the Rage of *Anger* deals *Miſchief* and *Deſtruction* around it.

2. *Indulge* not your Paſſion of *Anger:* It is like making keener a Sword to wound your own Breaſt, or with which to murder your Friend.

3. *Alexander the Great* deſtroyed his Friend *Clytus* in his Rage of Anger, who had before in Battle preſerved his Life.

4. By conſidering your own *Weakneſs*, you will find Pardon for the Frailties and Failings of Others.

5 To bear ſlight Provocations with *Patience*, will be imputed to Wiſdom.

6. And to wipe off Provocations from *Remembrance* will give Peace in your Mind, and baniſh Reproaches from Others.

7. Let the *Madneſs* of *Anger* be a *Leſſon* to avoid it; and never put to Sea in the Violence of a Storm.

8. Guard againſt all the Occaſions of unruly *Anger*.

9. A wiſe Man laughs at inſolent Speeches and Deriſion.

10. Entertain not Revenge to torment the Revenger, and diſcompoſe your natural and good Inclinations.

11. More readily forgive than revenge an Injury; which often draws down Miſchief on the Revenger.

12. Soft Anſwers to an angry Man abate and extinguiſh his Heat; ſo as ſometimes to compoſe Differences, and to conciliate Friendſhip.

13.

13. Few Things are worthy of Anger; which commonly begins in *Folly* or *Weakneſs*.

14. On *Folly* waiteth Shame, and on *Anger* Repentance and Remorſe!

PITY. 1. As the Hand of *Spring* ſtrews the Earth with her Bloſſoms and Flowers, and as the *Summer* diſtributes her Bounties in the Fruits and Harveſt, ſo the Hand of Pity diſtributes *Bleſſings* on the Children of Misfortune.

2. The *Pitier* of another commends himſelf; but the Incompaſſionate deſerve no Pity.

3. The *Butcher* feels no *Pity* for the *Lamb*, nor the *Cruel* for thoſe in Diſtreſs: But the *compaſſionate Man* melts with *Pity* at the Sufferings of his Fellow-Beings; who liſtens to the Cries of the *Poor*, and to the Calamities of thoſe in Diſtreſs.

4. The Fatherleſs and Widow, ſunk with Sorrow, call aloud for Pity and Relief!

5. The naked Wanderer in the Streets, ſhivering with Cold and Hunger, and without Habitation, call aloud for Compaſſion and Aſſiſtance!

6. Whilſt the *poor Man* groans in the Bed of Sickneſs, the *Unfortunate* languiſh in the Horrors of a *Dungeon*, or the *Aged* lift up a feeble Eye, imploring your *Pity!* who among you can riot in *ſuperfluous Enjoyments*, unfeeling of their Wants, and regardleſs of their Woes!

DESIRE *and* LOVE. 1. Let Youth avoid the Allurements of *Wantonneſs* and *Harlots*, attended with Madneſs and Blindneſs of Purſuit, and with Diſeaſe, Repentance, and Deſtruction.

2. The *Fountain* of Health, ſupplying the *Stream* of Pleaſure, will quickly be dried up; and every Spring of Joy will ſoon be exhauſted by unwarrantable Purſuits.

3. *Old Age* will overtake the Prime of your Life, and your Morning Sun ſhall decline before it be Noon.

4. But when *Virtue* and *Modeſty* enlighten the Charms of a *beautiful Woman*, her Luſtre is brighter than the *Stars* of Heaven, and the Power of her Influence it is in vain to reſiſt!

5. The Whiteneſs of her Boſom tranſcendeth the *Lilly*, and her Smiles are more delicious than a Garden of Roſes!

6. The *Innocence* of her Eye is like that of the Turtle, and Simplicity and Truth dwell within her.

7. Her *Kiſſes* give a Taſte of *celeſtial Enjoyment* and are as *Nectar* and *Ambroſia*, and the Perfumes of *Arabia* breathe from her Lips.

8. Shut not out the *Tenderneſs* and *Duty* of *Love*, the *Purity* of its Flame ſhall enoble your Conceptions, and exalt your Mind to receive the *faireſt* and *richeſt* Impreſſions!

III. *Of* WOMAN.

WOMAN. 1. Liſten, fair Woman, to the Inſtructions of Prudence and Precepts of Truth; and the Charms of your Mind ſhall give Luſtre to your Form; and your Beauty, like the Roſe it reſembles, ſhall retain its Sweetneſs when the Bloſſom is withered.

2. In the Morning of your Days, when Men gaze on you with Delight, be cautious of their alluring Speeches; guard well your Heart againſt their enticing Arts.

3. You are made Man's reaſonable Companion, not the Slave of his Paſſion; but to aſſiſt him in his Toils, and to ſoothe him in his Cares, with your Tenderneſs and ſoft Endearments.

4. She that winneth Man's Love, and reigns in his Breaſt, walks in her maiden Sweetneſs; with Innocence in her Ways and Modeſty in her Looks.

5.

5. Her Hand finds Employment without Gadding; she is attired with *Meatneſs*, and ſubſiſts on *Temperance*; Humility and Meekneſs adorn her Behaviour, and Harmony dwells within her.

6. She is attended with Decency; and her Anſwers are Mildneſs and Truth.

7. Submiſſion and Obedience are her Leſſons that ſhe puts in daily Practice; and Peace and Happineſs are her continual Reward.

8. Prudence and Virtue are her conſtant Companions.

9. Her Eye ſpeaks Kindneſs; and *Diſcretion*, with a Sceptre, ſits on her Brow.

10. The Awe of her Virtue and Preſence ſtrikes dumb the Tongue of the *licentious*.

11. Her Charity and good Nature appear when *Scandal* and *Reproach* intrude into her Company; or Silence then reſts on her Lips.

12. From the Conſciouſneſs of her own Innocence ſhe ſuſpects neither Evil or Guile in Others.

13. Happy is the Man who ſhall make her his Wife, and happy the Child that calls her Mother.

14. She preſides and commands at Home with Judgement, and is obeyed.

15. The Care of her Family is her Delight, and Elegance and Frugality are ſeen in her Houſe.

16. Her Conduct is an Honour to her Huſband; who hears her Praiſe with a ſecret Delight.

17. She forms the Minds of her Children to *Manners*, *Wiſdom*, and *Goodneſs*, by her own bright Example.

18. Her Word is their *Law*, and her Motions command Obedience.

19. She ſpeaks, and her Servants obey; or points, and the Thing is *done*.

20. Their Reſpect gives *Willingneſs* to their Hearts, and *Wings* to their Feet.

21. She is neither elevated in Proſperity, nor depreſſed in Adverſity.

22. Her Huſband's Troubles are lightened by her Counſels, and ſoftened by her Endearments. She puts his Heart in her Boſom, and he receives Reſt.

IV. *Of* CONSANGUINITY *or* NATURAL RELATIONS.

HUSBAND. 1. Take a faithful Wife (if you can find her) to be a uſeful Member of Society.

2. Examine with Care, and fix with Caution, and not on a ſudden; ſince on this preſent Choice depends your future Happineſs, and that of your Poſterity.

3. If her Time is waſted in Dreſs and coſtly Ornaments, if ſhe is fond of her Beauty and of Praiſe, laughs and talks much and loud, and roves abroad with her Eyes on the Faces of Men — *if her Beauty were as the Sun or Stars in the Firmament of Heaven, and her Fortune as rich as both the* Indies, *turn from her pernicious Charms and Allurements, as Snares of Deſtruction to the Peace and Happineſs of your Soul!*

4. But when you find her accompliſhed with a Mind and Form, *ſuch as have been deſcribed*, take her Home to your Houſe, as worthy of being your Boſom Friend and faithful Companion for Life.

5. Cheriſh her as a *Bleſſing* ſent you from Heaven, and let your Kindneſs endear you to her.

6. Treat the Miſtreſs of your Houſe with Reſpect, that your Servants may obey her.

7. Make her the Companion of your Pleaſures, and oppoſe not her Inclinations without Cauſe.

8.

8. Reprove her Faults with *Gentleneſs* and *Kindneſs*, and exact not Obedience with Rigour.

9. Truſt your Secrets in the Boſom of her Sincerity, and you will not be deceived.

10. Be faithful to her Bed, for the Sake of hers, your own, and your Childrens Happineſs.

11. Sooth her *Affliction* with Tenderneſs in Pain or Sickneſs; a Look of your Pity and Love will mitigate her Sorrows, and avail her more than the Aid of Phyſicians.

12. Remember your own *Imperfections*, and be not ſevere to her *Weakneſs*: Conſider the Delicacy of her Frame and Sex.

FATHER. 1. Your Duty, as a Parent, is to ſupport and make happy what you have produced.

2. It depends on the *Parent*, whether the *Child* ſhall be a *Bleſſing* or *Curſe* to himſelf; or an uſeful or unworthy Member of Society.

3. Seaſon him early with *Maxims* of Inſtruction and Truth.

4. Guide him right in the Bent of his Inclinations; and ſuffer not evil Habits to gain Strength with his Years.

5. So ſhall he riſe like a *Cedar* on the Mountain's Top, and his Head ſhall be ſeen above the Trees of the Foreſt.

6. A wicked Son is a Reproach to his Father; but a worthy one an Honour to his Age.

7. The *Soil* of the Son is the Parent's own to cultivate, which he ſhould not neglect to do, if he expects a Crop of Reputation.

8. Teach him *Obedience*, *Gratitude*, *Modeſty*, and *Charity*, and he will return you the Obligation, and gain univerſal Eſteem.

9. Teach him *Temperance* to gain *Health*; *Prudence* that *Fortune* may attend him; *Juſtice* that he may be honoured; *Sincerity* that his own Heart may not reproach him; *Diligence* that his Wealth may increaſe; *Benevolence* that his Mind may be exalted; *Science* that his Life may be uſeful; and *Religion* that he may be happy.

SON. 1. Learn, from the Creatures of God, Inſtruction and Duty.

2. The young *Stork* in the Wilderneſs beareth his aged Sire on his Wings, lodges him in Safety, and provides him with neceſſary Food.

3. Be grateful therefore to the Man who was the Cauſe of your Life; and dutiful to your Mother who ſuſtained your Burthen.

4. Hearken to your Father's *Counſel* for your own Advantage, proceeding from his Love; who wiſhes your Welfare and toils for your Eaſe: Honour and Reverence are therefore due to your Benefactor.

5. Give Aſſiſtance and Support to your aged and infirm Parents in the Decline of Life, and remember your helpleſs Infancy and Frowardneſs of Youth, when you were aſſiſted and ſupported by them.

6. Your own Children ſhall repay your *Reverence* and *Duty*, in the *Example* you ſet them of filial Love and Obedience.

BROTHERS. 1. Children of one Father and Mother, and provided for by their Care, ſhould be united by the ſame Bonds of Affection, that Peace and Happineſs may reign in one and the ſame Family.

2. Let the Remembrance of the *Ties* of Blood unite your Hearts, when you are ſeparated in the World by divided Intereſts, and oppoſed by Strangers.

3. Forſake not a Brother or Siſter in Adverſity; but let the Parent's Fortune and Benevolence contribute to the Support of the whole Race; and let his Care for the whole Family appear in the Love for each other.

V. *Of* PROVIDENCE: *Or the Accidental Differences of* MEN.

WISE *and* IGNORANT. 1. The Gifts of *Underſtanding* are from God, who allots to each his Portion of Good.

2. His Benefits of all Kinds, whether of *Knowledge*, *Wiſdom*, *Power*, or *Riches*, beſtowed on Individuals, were intended to contribute to the Good of Others, or of the whole, in all his wiſe Diſpenſations; and therefore we ſhould be aſſiſting to thoſe who need our Help, in Imitation of GOD's divine Example, conferring his Benefits on Men.

3. The Pride of Ignorance, and Conceit in much Talking, are inſufferable; yet it is Wiſdom to hear Impertinence and Abſurdities with Patience, and to pity Obſtinacy and Weakneſs.

4. The Wiſe perceive their own *Imperfections*, without receiving their own Approbation. But the *Weak* and *Ignorant* ſee and admire the Pebbles in the ſhallow Stream of their own Minds; who produce them for *Pearls*, and delight themſelves with the Applauſe of thoſe who believe them.

5. Some Men are given to boaſting in the Knowledge of Things of no Worth, but are without Underſtanding in many Things where it is a Shame to be ignorant.

6. In the Paths of Wiſdom they labour to find out *Folly*, but meet Shame for their Reward.

7. The Wiſe cultivate their Minds with uſeful Knowledge and Arts, the Benefit of which to the Public rewards them with Honour.

8. The Attainment of Virtue is the higheſt Learning; and the *Science* of *human Happineſs* the trueſt Study of Life.

RICH *and* POOR. 1. The Man of Riches, with a Mind rightly diſpoſed to uſe them, is *peculiarly* favoured of God. He looks on his Wealth with Pleaſure, becauſe it enables him to do Good.

2. He protects the Poor and Injured; and curbs the Oppreſſions of the *Mighty*.

3. He ſeeks for Objects of Compaſſion, by enquiring into their Wants; who judiciouſly relieves them without Oſtentation.

4. He encourages and rewards Merit and Ingenuity, and every uſeful Art and Deſign.

5. His Country is enriched by his noble Plans and Deſigns; and the Sciences receive Improvement.

6. He diſtributes the *Superfluities* of his Table to the Poor.

7. But he who heaps up an *Abundance*, and rejoiceth alone in the Poſſeſſion of it, defrauds himſelf of that true *Happineſs* ariſing from the general Good intended by GOD to Mankind; who conſiders not the Poor, nor their Labour, that ſupports the Dignity and Grandeur of a whole Nation.

8. He lives and thrives by Oppreſſion and the Ruin of his Fellow Subjects and Beings.

9. He drinks the Tears of *Orphans*, and the Cries of the *Widow* are as Muſic to his Ear!

10 His Heart is hardened with the Love of Wealth, and incapable of tender Impreſſions from Grief or Diſtreſs.

11. But the Anxiety of his Mind and his rapacious Deſires take Vengeance upon him for the Calamities he brought on Others. And the Miſeries of Poverty are Nothing when compared with the *Cries of his Conſcience*.

12.

12. The poor Man's Table is not crowded with Flatterers and Devourers. He ſits down in Peace, and is not harraſſed with Dependents, nor teized with the Clamours of Sollicitation.

13. Though he is debarred from the *Luxuries* of the Rich, he is not troubled with their attending Diſeaſes. His Bread and Water are more pleaſant taſted, than the Draughts of the *Luxurious* are to them.

14. His Labour preſerves his Health and produces him Repoſe.

15. His Deſires are humble and moderate, and his *Contentment* greater than that of Grandeur, Wealth, and Ambition.

16. The *Providence* of God therefore diſpenſeth Happineſs to all; and the Diſtribution thereof is not ſo unequally made, as the vain, the rich, or ambitious Man commonly conceives.

MASTERS *and* SERVANTS. 1. Let Man repine not at Servitude, which is but Subordination, and by God's Appointment, for the Good of a whole People.

2. The Servant's Honour is his Fidelity, and his Virtues are Submiſſion and Obedience. In the ſame Manner all the Officers of an Army are the Servants of their KING, their MASTER, every one of whom are ſubordinate in their Duty and Obedience one to another, from the KING, who is ſupreme, down to the loweſt common Soldier.

3. Every Servant therefore muſt obey his Maſter, in Subordination; muſt do his Duty, and be diligent and faithful in his Truſt; whoſe Time and Labour are his Maſter's that rewards him.

4. Maſters ſhould be juſt and kind to their Servants, if they expect Fidelity from them; and be reaſonable in their Commands if they expect Obedience.

5. The Severity and Rigour of Maſters creating Fear in Servants, will not command their Eſteem.

6. Duty ſhall become a Pleaſure, when *Kindneſs* is mixed with *Reproof*, and *Reaſon* with *Authority*.

7. Fidelity and Diligence will follow Gratitude, in Servants; and therefore the Reward of Maſters ſhould follow their Fidelity and Diligence.

MAGISTRATES *and* SUBJECTS. 1. The Glory of a KING, as CHIEF MAGISTRATE, is in the Welfare and Happineſs of his People; and his *Power* and *Dominion* in the Hearts of his Subjects.

2. The Mind of a *great Prince* is exalted with the Grandeur of his Truſt and Power; who conſiders and ſearches out great Things worthy of his high Station.

3. He aſſembles together and hears the Counſel of all the wiſe Men of his Kingdom; and determines the Reſult by his own Judgement.

4. He ſearches into great Men's Abilities, and employs them according to their Merits.

5. His Miniſters and Magiſtrates are wiſe and juſt; and he is not deceived by any.

6. The Arts flouriſh by his Smiles; and Science is improved by his Example, Patronage, and Encouragement.

7. He excites Emulation among the Learned and Ingenious; and the Glory of his Kingdom is exalted by their Labours.

8. The Merchant who extends his Commerce, the Farmer who enriches his Lands, the Artiſt and Scholar who improve his People, are all honoured and rewarded with his Favour and Bounty.

9. New Colonies are planted, ſtrong Ships are built, Rivers are opened for Conveniency; Harbours, for Safety, formed and fortified; whereby his People abound in Riches, and his Kingdom increaſes in Strength.

10. His *Statute Laws* are framed by Wiſdom and Equity: The Fruits of his Subjects Labour are enjoyed in Security; and in their due Obſervation of his Laws their Happineſs conſiſts.

11. On the Principles of Mercy his Judgements are founded; but his Juſtice is erected on the ſtrict and impartial Puniſhment of Offenders.

12. He is ready to hear the Complaints of his Subjects, to reſtrain Oppreſſion, and deliver them from the Hand of Tyranny.

13. His People look up to him with Awe, Reverence, and Love, as a Father, and conſider him as the Guardian of their Happineſs.

14. Their Affection produces in him a reciprocal Love of the Public; the Security of whoſe Happineſs is the Object of his Care.

15. The *Machinations* of his Enemies endanger not his State; the Hearts of his People are full of Love, and no Murmurs can ariſe againſt him.

16. His Subjects are firm and faithful, and are like a *Wall of Braſs* to his Dominions. The Army of his Enemy flies before him.

17. Security and Peace bleſs the Habitations of his People; and Glory and Strength irreſiſtible encircle his Throne!

BENEVOLENCE. 1. Acknowledge his *Benevolence* who honoured you with Reaſon, endued you with Speech, and placed you in Society for Protection, and to give as well as receive Helps and Obligations.

2. Your *Food, Cloathing, Conveniences of Dwelling, Protection from Injuries,* and *Enjoyments of Life,* you owe to the Help of God and Men, and could not be benefited in but from *Society*; therefore to Mankind Friendſhip and Benevolence are due for the Intereſt and Benefits you receive from them, as Men are bound in mutual Obligations to one another by their Connection in one Community.

3. As the Roſe breathes Sweetneſs from its own Nature, ſo the benevolent is agreeable to Others.

4. He approves his own Thoughts with Tranquility of Mind, and wiſhes the Proſperity of his Neighbour.

5. He delights not in *Slander,* but pities the Faults of the Unhappy.

6. He ſearches out Occaſion to do *Good,* in removing Evil from other Men.

7. He wiſhes Happineſs to Others, and endeavours to promote it.

JUSTICE. 1. The Safety and Peace, Intereſt and Honour, of Society depend on *Juſtice*; and the Happineſs of *Individuals* on the ſeparate and right Uſe and Enjoyment of their Properties, Privileges, and Poſſeſſions.

2. Therefore let not immoderate Deſires break through the Bounds of Equity and Juſtice.

3. Let no Temptation or Provocation excite you to invade your Neighbour's Right, nor lift up your Hands to the Danger of his Life: Defame him not perſonally in his honeſt Character, nor bear falſe Witneſs againſt him.

4. Corrupt not his Wife or his Servants to wrong or forſake him.

5. Do no Injury to him you cannot repair.

6. Be impartial and juſt in your Dealings, *as you would that Men ſhould do unto you.*

7. Deceive not thoſe who rely on your Truſt. It is leſs Evil to ſteal than to betray.

8. Defraud no Man of his Hire, nor hinder the poor Man of his Right.

9.

9. Be ſatisfied with moderate Gain in Trade, and take not Advantage of Ignorance.

10. Pay what you owe, as your *Creditor* relied on your Honour, who is obliged to pay his Obligations to Others; and becauſe *Honeſty* is the Bond of Happineſs, connecting Society.

CHARITY. 1. Happy is the Man who has ſown in his Breaſt the Seeds of Benevolence; the Produce thereof ſhall be *Charity*.

2. He helps the Poor in Trouble, and aids the Proſperity of Men.

3. He deals not in *Cenſure*, Tales of Envy, *Malevolence*, and Slander; and Revenge and Spite in him have no Poſſeſſion.

4. He returns not Evil for Evil; hates not his Enemies; but repays their Injuſtice with friendly Reproof.

5. Human Griefs and Anxieties excite his Compaſſion; who endeavours to lighten the Weight of their Misfortunes, and the Pleaſure of his Succeſs is his only Reward.

6. He reconciles the Differences and Diſputes of angry Men, and prevents, as far as he can, the Miſchiefs of *Strife* and *Animoſity*.

7. He promotes Peace and Good-will among his Neighbours; and he is ſpoken of with Praiſe and Benediction.

GRATITUDE. 1. As the Branches of a Tree return the Sap to the Root whence it aroſe, and as a River returns its Stream to the Sea whence its Spring was ſupplied, ſo a grateful Man returns a Benefit to his Benefactor.

2. He acknowledges his Obligation with Chearfulneſs, and looks on his Benefactor with Love and Eſteem.

3. If he is not able to return it, he keeps it in a kind Remembrance.

4. The Heart of a generous Man is like a fruitful Soil; but the Heart of the ungrateful like a rocky Soil, or Deſart of barren Sand.

5. Though to oblige is more honourable than to be obliged, and though the Act of Generoſity commands Eſteem, yet Gratitude touching the Heart is amiable in the Sight of God and Man; therefore envy no Benefactor, nor conceal a Benefit that he confers.

6. Receive no Favour from the Haughty, the Selfiſh, and Avaritious: The Vanity of the one will expoſe you, and the Avarice of the other will never be ſatisfied.

SINCERITY. 1. Let thoſe who are enamoured with the Beauties of Truth, and the Simplicity of her Charms, never forſake Sincerity attended with Honour, to wait upon Guile attended with Shame.

2. In the ſincere Man, Hypocriſy and Deceit have no Place; who bluſhes at Falſhood, and is confounded; but ſpeaks of Truth with a ſteady Eye.

3. He ſupports the Dignity of Character, in Oppoſition to the mean Arts of Diſſimulation and Deceit.

4. Being conſiſtent with himſelf, he is never at a Loſs, nor afraid to aſſert Truth.

5. With Prudence, Caution, and Judgement, he ſpeaks.

6 He admoniſhes with Friendſhip, reproves with Freedom, and performs as he promiſes.

7. The Hypocrite hides his own Heart, maſks his Words, and ſtudies to deceive; laughs in Sorrow, weeps in Joy, without Words or Actions of Interpretation.

8. He works in the Dark like a Mole, and fancies himſelf ſafe; but blunders into Light, and expoſes himſelf to open View and Contempt, with the Dirt upon his Head.

9. He paſſes his Days in perpetual Conſtraint, with his Tongue and his Heart for ever at Variance.

10. He labours for the Character of *juſt*, and would fain be thought *cunning*. *The Pains he takes to conceal what he is, are more than would really make him what he would ſeem.* His Cunning therefore will be held in *Deriſion*, when the *Aſs* is ſtripped of his *Lion*'s Skin.

VI. *Of* RELIGION.

1. There is but ONE GOD, the Author, Creator, and Governor, of the World, almighty, eternal, and incomprehenſible; who is *ſupreme*, moſt wiſe and beneficent; and to whom belong Worſhip, Adoration, Thankſgiving, and Praiſe!

2. He has ſtretched forth the Heavens, and fixed the Courſes of the celeſtial Bodies by his Power.

6. His Providence is over all his Works, which he governs by inſtituted Laws, and infinite Wiſdom.

7. With Reſpect to his *Preſcience* there is Nothing contingent, with Reſpect to his *Providence* there is Nothing accidental.

8. His Ways are inſcrutable, and his Knowledge tranſcendeth all Conception.

9. He is the Fountain of Excellence and Center of Perfection.

10. His Creatures declare his Goodneſs, and all their Enjoyments loudly ſpeak his Praiſe.

11. He cloaths them with Beauty, and feeds them, and preſerves their Species from Generation to Generation.

12. If we lift up our Eyes to the Heavens, his Glory ſhines forth; if we look down to the Earth, the Fields and Woods, Fountains, Hills, and Vallies, ſpeak his Praiſe!

13. He has exalted Man above his other Creatures, endowed him with Reaſon for Dominion; fitted him with Language for Society; endowed his Mind with the Powers of Meditation and Contemplation, that he might contemplate and adore his inimitable Perfections.

14. As he has ordained the Laws for the Rule of Man's Life, ſo has he as kindly ſuited Man's Duty to his Nature, that Obedience to his Precepts might be productive of his own Happineſs.

15. He reſpects not the Perſons and Stations of Men: The High and the Low, the Rich and the Poor, the Wiſe and the Ignorant, when the Shackles of Mortality are removed from the *immortal* Part of their Beings, to him will appear equal; *except* in the Preference of their good Acts and Deeds, when every Man ſhall be rewarded according to his Merit.

16. *Let Praiſe and Adoration be given to the* GREAT CREATOR *of all Things, by all Things that are capable to adore him!*

17. *Let Man be admoniſhed by Prudence, reſtrained by Temperance, guided by Juſtice, warmed in his Heart by Benevolence, and inſpired with Devotion by Gratitude to Heaven, that he may enjoy preſent Happineſs, and future Felicity!*

Political RULES *and* MAXIMS.

☞ 1. *Never to go to Law, if you can prudently avoid it.*

2. *Never to take dangerous Phyſic, if gentle Means and Remedies will anſwer the End.*

3. The Conteſts in *Law* are ſimilar to deſperate *Remedies* in Phyſic; often as bad or worſe than the Diſeaſe they are applied to cure.

4.

4. Deſperate Remedies ſhould never be applied but in great *Extremity*; after gentle Means and ſafe Remedies have been tried without the deſired Effect.

5. The Conteſt of *Law* ſhould never be uſed, if the *Mediation* of Friends and Neighbours can ſettle *Right* and *Juſtice* between the Parties at Variance.

6. The *Doctors* (as they call them) in general recommend the Uſe of their Medicines *(however pernicious they may prove in their Effect)* for the Sake of Profit; who take their own *Preſcriptions* as ſeldom as poſſible.

7. The *Lawyers*, in general, recommend *Lawſuits*, becauſe they expect Profit from their *Clients*. They as ſeldom as poſſible go to Law themſelves, *becauſe it is a Thing they hold not very good to do.*

8. Take the *Profit* away from the *Profeſſors* of *Phyſic* and of the *Law*, and you will quickly find that your *Lives* and *Properties* will be left to ſhift for themſelves; and will oftener do better without than with the Aſſiſtance of intereſted Helpers!

9. Yet there are daily accidental Hurts, and *caſual* Diſeaſes, requiring immediate Aſſiſtance from the honeſt and ſkilful *Surgeon* or *Phyſician*; as much as a Houſe or Machine, damaged by *Wind*, *Violence*, or when *on Fire*, requires immediate Help from the able *Carpenter*, or *Fire-Extinguiſher*, to repair, or ſave the Fabric from Deſtruction.

10. So likewiſe there are *common Caſes* daily occurring about accidental *Right* and *Property*, or uſual *Infringement*, requiring honeſt and ſkilful Lawyers to *aſcertain*, *eſtabliſh*, and *reſtrain*, between the *Parties* concerned, or in Diſpute; as being the only *proper* Judges, Determiners, and Eſtabliſhers, of ſuch *legal* Matters

11. Never to go to *Law*, or *War*, but on a juſt, neceſſary, and honourable, Occaſion.

12. Never to begin a Law-ſuit, fight a Battle in War, or undertake any other hazardous or dangerous Enterprize, if it can be avoided, but as it ſhall correſpond with proper *Time* and *Place*.

13. Never to enter into the *Familiarities* of Friendſhip with any Man, till you have proved his *Principles*, *Sincerity*, and *Fidelity*; becauſe falſe, deceitful, and bad Men will expoſe your Freedoms, diſhonour your Confidence repoſed, and ſometimes involve you in Danger or Difficulties.

14. No Man of *ill Morals*, or *Irreligion*, is fit for a Friend; becauſe he is a dangerous Companion.

15. A Man of Honour, Honeſty, and Integrity, is *precious*; but when he has Temperance, Charity, Diſcretion, Prudence, Generoſity, Valour, Wiſdom, Nobility, and High Station, joined, he is a *Jewel* of ineſtimable Value! — L. L. — D. C. — A. T. — *&c.*

16. The more you endeavour to hide your own Applauſe, the more your *juſt Fame* will be publiſhed.

(To be continued.)

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Shall Vice *eſcape from* Ridicule,
Becauſe its Owner *is a* Fool?
Or Error *not be put to Shame,*
Becauſe it bears an Author's Name!

PALL. AUTHOR.

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		o	′	″	o	′	″	h	m	s	h	m
ABBEVILLE	France	50	7	1 N	1	49	45 E	0	7	19		
Abo	Finland	60	27	10 N	22	13	30 E	1	28	54		
Achem	N. W. Part Iſl. Sumatra	5	22	0 N	95	34	0 E	6	22	16		
Agra	India	26	43	0 N	76	44	0 E	5	6	56		
Aix	France	43	31	35 N	5	26	15 E	0	21	45		
Alby	France	43	55	44 N	2	31	15 E	0	10	5		
Alexandretta	Syria	36	35	10 N	36	20	0 E	2	25	20		
Alexandria	Ægypt	31	11	20 N	30	16	30 E	2	1	6		
Amiens	France	49	53	38 N	2	18	0 E	0	9	12		
Ancona	Italy	43	37	54 N	13	30	30 E	0	54	2		
Angers	France	47	28	8 N	0	33	45 W	0	2	15		
Angouleme	France	45	39	3 N	0	8	45 E	0	0	35		
Antibes	France	43	34	50 N	7	8	30 E	0	28	34		
Antwerp	Flanders	51	13	15 N	4	24	15 E	0	17	37	6	0
Archangel	Ruſſia	64	34	0 N	38	5	50 E	2	35	40	6	0
Arica	Peru	18	26	38 S	71	11	0 W	4	44	44		
Arles	France	43	40	33 N	4	38	0 E	0	18	32		
Aſcenſion Iſl.	Angola	7	57	0 S	13	59	0 W	0	55	56		
Athens	Turkey	38	5	0 N	23	52	30 E	1	35	30		
Auch	France	43	38	46 N	0	30	0 E	0	2	0		
Aurillac	France	44	55	10 N	2	27	0 E	0	9	48		
Auxerre	France	47	47	54 N	3	34	15 E	0	14	17		
Avignon	France	43	57	25 N	4	48	30 E	0	19	14		
Auranches	France	48	41	18 N	1	22	45 W	0	5	31		
Ant. Babylon	Meſopotamia	33	0	0 N	42	46	30 E	2	51	6		
Bagdad	Meſopotamia	33	21	0 N	43	46	30 E	2	55	6		
Balaſore	India	21	20	0 N	86	0	0 E	5	44	0		
Bayeux	France	49	16	30 N	0	42	45 W	0	2	51		
Bayonne	France	43	29	21 N	1	30	0 W	0	6	0	3	30
Great Bear Iſl	. . . . .	54	34	0 N	79	56	0 W	5	19	44		
Beauvais	France	49	26	2 N	2	4	45 E	0	8	19		
Berlin	Germany	52	32	30 N	13	26	15 E	0	53	45		
Beſançon	France	47	13	45 N	6	2	30 E	0	24	10		
Beziers	France	43	20	41 N	3	12	30 E	0	12	50		
Blanco Cape	Patagonia	47	20	0 S	70	5	0 W	4	40	20	9	45
BolognaS.Petr.	Italy	44	29	36 N	11	21	15 E	0	45	25		
Boſton	*New England*	42	25	0 N	70	37	15 W	4	42	29		
Boulogne	France	50	43	31 N	1	36	45 E	0	6	27		
Bourbon Iſl. St. Dennis	Madagaſcar	20	51	43 S	55	30	0 E	3	42	0		
Bourdeaux	France	44	50	18 N	0	34	45 W	0	2	19		

A New *Geographical* TABLE of *Latitudes* and *Longitudes*, and also *Tides*, continued *alphabetically*. For the *Use* of *Seamen*.

PLACES Names.	Countries on *Coasts* or in *Provinces*.	Latitude.	Longitude. Degrees.	Longitude. Time.	High Water at New and Full ☽.
Breslaw	Silesia	51° 3′ 0 N	17° 8′ 45 E	1h 8m 35	h m
Breſt	France	48 23 0 N	4 30 45 W	0 18 3	3 15
Brieux St.	France	48 31 21 N	2 43 15 W	0 10 53	
Bruſſels	Netherlands	50 51 0 N	4 21 45 E	0 17 27	
Buenos Ayres	Braſil	34 35 26 S	58 31 15 W	3 54 5	
Cabello Porto	Terra Firma	10 30 50 N	67 32 0 W	4 30 8	
Cadiz	Spain	36 31 7 N	6 1 15 W	0 24 5	4 30
Caen	France	49 11 10 N	0 21 45 W	0 1 27	9 0
Cairo	Ægypt	30 2 30 N	31 26 15 E	2 5 45	
Cajaneburg	Sweden	64 13 30 N	27 43 15 E	1 50 53	
Calais	France	50 57 31 N	1 51 0 E	0 7 24	11 30
Calcutta, F. Wi.	*India*	22 36 0 N	88 25 45 E	5 53 43	
Callao	Peru	12 1 53 S	76 58 0 W	5 7 52	
Calmar	Sweden	56 40 30 N	16 21 45 E	1 5 27	
Cambray	Netherlands	50 10 30 N	3 13 45 E	0 12 55	
Cambridge	England	52 17 0 N	0 5 45 E	0 0 23	
Candia Iſl.	Turkey	35 18 35 N	25 18 0 E	1 41 12	
Canton	China	23 7 30 N	113 2 0 E	7 32 8	
Carleſcroon	Sweden	56 20 0 N	15 26 15 E	1 1 45	
Carthagena	Terra Firma	10 26 35 N	75 26 15 W	5 1 45	
Caſan	Ruſſia	55 44 0 N	49 30 0 E	3 18 0	
Caſtres	France	43 37 10 N	2 14 45 E	0 8 59	
St. Catherine Iſl.	Plata	27 35 0 S	49 17 0 W	3 17 8	
Cayenne	Iſl. Cayenne	4 56 0 N	52 15 0 W	3 29 0	
Chalons	France	48 57 12 N	4 22 15 E	0 17 29	
Challon	France	46 46 50 N	4 51 30 E	0 19 26	
Chandenagore	India	22 51 26 N	88 29 15 E	5 53 57	
Charlton Iſl.	New Wales	52 3 0 N	80 10 0 W	5 20 40	
Chartres	France	48 26 49 N	1 29 0 E	0 5 56	
Cherburg	France	49 38 26 N	1 38 15 W	0 6 33	7 30
Churchill R. Pr. W. Fort	New Wales	58 56 0 N	94 55 0 W	6 19 40	
Civita Vechia	Italy	42 5 24 N	11 46 15 E	0 47 5	
Cape Clear	Ireland	51 18 0 N	11 15 0 W	0 45 0	4 30
Clermont	France	45 46 45 N	3 5 0 E	0 12 20	
Cape Comorin	India	7 56 0 N	78 5 0 E	5 12 20	
Conception	Chili	36 42 53 S	72 40 0 W	4 50 40	3 0
Condor Pulo Iſl.	Gulf Siam	8 40 0 N	107 20 0 E	7 9 20	
Conſtantinople	Turkey	41 0 0 N	28 53 30 E	1 55 34	
COPENHAGEN	Denmark	55 40 45 N	12 45 15 E	0 51 1	
Coquimbo	Chili	29 54 26 S	71 15 45 W	4 45 3	
Coutances	France	49 2 50 N	1 27 30 W	0 5 50	
Cummin Iſl.	China	31 40 0 N	121 4 0 E	8 4 16	
Dantzic	Poland	54 22 0 N	18 31 0 E	1 14 4	
Dax	France	43 42 23 N	1 4 0 W	0 4 16	
Dieppe	France	49 55 27 N	1 4 15 E	0 4 17	10 30

A New *Geographical* TABLE of *Latitudes*, *Longitudes*, and *Tides*, of Places continued *alphabetically*. For the *Use* of *Seamen*.

PLACES Names.	Countries on *Coasts* or in *Provinces*.	Latitude.	Longitude. Degrees.	Longitude. Time.	High Water at New and Full ☽.
Dijon	France	47° 19′ 22 N	5° 2′ 30 E	0h 20m 10	h m
Dol	France	48 33 9 N	1 46 15 W	0 7 5	
Drontheim	Norway	63 26 10 N	11 3 45 E	0 44 15	
Dunkirk	France	51 2 4 N	2 22 30 E	0 9 30	12 0
EDINBURGH	Scotland	55 57 57 N	3 18 16 W	0 13 13	4 30
Embrun	France	44 34 0 N	6 29 0 E	0 25 56	
Erzerom	Armenia	39 56 35 N	48 35 45 E	3 14 23	
Evereux	France	49 1 24 N	1 8 45 E	0 4 35	
Exeter	England	50 44 0 N	3 34 30 W	0 14 18	
Falmouth	England	50 8 0 N	5 28 20 W	0 21 53	,
Ferrara	Italy	44 54 0 N	11 36 15 E	0 46 25	
FERRO I. Town	Canaries	27 47 20 N	17 33 45 W	1 10 15	
Florence	Italy	43 46 30 N	11 2 0 E	0 44 8	
St. Flour	France	45 1 55 N	3 7 30 E	0 12 22	
François Cape	Hiſpaniola	19 40 0 N	71 40 0 W	4 46 40	
Frawenburgh	Pruſſia	54 21 15 N	20 7 30 E	1 20 30	
Frejus	France	43 26 3 N	6 44 45 E	0 26 59	,
Fronſac Straits, narrow Part, op. a Mount[n] near Contin[t]	*Nova Scotia*	45 39 0 N	61 20 0 W	4 5 20	
Geneva	Savoy	46 12 0 N	6 35 0 E	0 26 20	
Genoa	Italy	44 25 0 N	8 35 45 E	0 34 23	
George, Fort St.	India	13 13 0 N	80 2 15 E	5 20 9	
Ghent	Netherlands	51 3 0 N	3 43 45 E	0 14 55	
Goa	India	15 31 0 N	73 45 0 E	4 55 0	
Good Hope Cape	Caffers	33 55 42 S	18 23 15 E	1 13 33	3 0
GOTTENBUR.	Sweden	57 42 0 N	11 38 45 E	0 46 35	
GOTTING. Ob.	Germany	51 31 54 N	9 54 0 E	0 39 36	
Granville	France	48 50 11 N	1 37 0 W	0 6 28	
Graſſe	France	43 39 25 N	6 56 0 E	0 27 44	
GREENW. Obſ.	England	51 28 40 N	0 0 0	0 0 0	
Grenoble	France	45 11 49 N	5 43 0 E	0 22 52	
Guaquil	Peru	2 11 21 S	81 11 30 W	5 24 46	
Hague	Netherlands	52 4 10 N	4 17 30 E	0 17 10	8 15
Havanna	Iſland of Cuba	23 11 52 N	82 18 30 W	5 29 14	
St. Helena Iſl. James Fort	Benguela	15 55 0 S	5 49 0 W	0 23 16	
Hernoſand	Sweden	62 38 0 N	17 53 0 E	1 11 32	
Hoai-Nghan	China	33 34 40 N	118 49 30 E	7 55 18	
Jamaica, Part Royal Iſland	Weſt Indies	18 0 0 N	76 45 30 W	5 7 2	
Janerio Rio	Braſil	22 54 10 S	42 45 0 W	2 51 0	
Jeruſalem	Paleſtine	31 55 0 N	35 20 0 E	2 21 20	
Ingolſtadt	Germany	48 46 0 N	11 22 30 E	0 45 30	
St. John's Fort	Newfoundland	47 32 0 N	52 48 15 W	3 31 13	
Iſlamabad	India	22 20 0 N	91 45 0 E	6 7 0	
St. Julian Port	Patagonia	49 10 0 N	68 44 0 W	4 34 56	
Juthia	India	14 18 0 N	100 50 0 E	6 43 20	

A New *Geographical* TABLE of *Latitudes*, *Longitudes*, and alſo *Tides*, of Places, continued *alphabetically*. For the *Uſe* of *Seamen*.

PLACES Names.	Countries on *Coaſts* or in *Provinces*.	Latitude.			Longitude. Degrees.			Time.			High Water at New and Full ☽	
		o	′	″	o	′	″	h	m	s	h	m
Landau	Germany	49	11	40 N	8	7	30 E	0	32	30		
Landſcroon	Sweden	55	52	0 N	12	46	45 E	0	51	7		
Lauſance	Switzerland	46	31	5 N	6	45	15 E	0	27	1		
Lectoure	France	43	56	2 N	0	37	0 E	0	2	28		
Leipſic	Germany	51	19	14 N	12	20	0 E	0	49	20		
Leſkeard	England	50	26	55 N	4	41	45 W	0	18	47		
Leyden	Netherlands	52	10	0 N	4	27	30 E	0	17	50		
Liſle	Netherlands	50	37	50 N	3	4	15 E	0	12	17		
Lima	Peru	12	1	15 S	76	49	30 W	5	7	18		
Liſbon Congr. Orator	Portugal	38	42	20 N	9	7	30 W	0	36	30		
LIZARD	England	49	57	0 N	5	43	0 W	0	22	52	7	30
LOND. *St. Paul's*	England	51	30	40 N	0	5	37 W	0	0	22½	2	30
Lorenzo Cape	Peru	1	2	0 S	80	17	0 W	5	21	8		
St. Louis Port	Hiſpaniola	18	19	0 N	73	6	0 W	4	52	24		
Louiſbourg	Cape Breton	45	53	45 N	59	55	0 W	3	59	40		
Louveau	India	12	42	3 N	101	1	30 E	6	44	6		
Lucon	France	46	27	14 N	1	10	30 W	0	4	42		
Lunden	Sweden	55	41	36 N	13	21	15 E	0	53	25		
Lyons	France	45	45	51 N	4	49	45 E	0	19	19		
Macao	China	22	12	44 N	113	46	15 E	7	35	5		
MADRID	Spain	40	25	0 N	3	44	30 W	0	14	58		
Mahon Port, Ft. St. Philip	Iſl. *Minorca*	39	50	46 N	3	48	30 E	0	15	14		
Malacca	India	2	12	6 N	102	5	0 E	6	48	20		
Malines	Netherlands	51	1	50 N	4	28	45 E	0	17	55		
Malo St.	France	48	38	59 N	2	2	15 W	0	8	9	6	0
Malta Iſl.	Italy	35	54	0 N	14	28	30 E	0	57	54		
Manila City	Iſl. Manila	14	30	0 N	120	20	0 E	8	1	20		
Marſeilles	France	43	17	45 N	5	22	15 E	0	21	29		
Martha St.	Terra Firma	11	26	40 N	74	4	30 W	4	56	18		
Martinico, St. Peter's Fort	Weſt Indies	14	44	0 N	61	21	16 W	4	5	25		
Mauritius Iſl. Port Louis	Madagaſcar	20	9	45 S	57	28	0 E	3	49	52		
Meaux	France	48	57	37 N	2	52	30 E	0	11	30		
Mergui	India				98	8	45 E	6	32	45		
Metz	France	49	7	5 N	6	11	0 E	0	24	44		
MEXICO City	Mexico	20	0	0 N	103	40	0 W	6	54	40		
Modena	Italy	44	34	0 N	11	12	30 E	0	44	50		
Mons	Netherlands	50	27	10 N	3	57	15 E	0	15	49		
Montpellier	France	43	36	33 N	3	52	45 E	0	15	31		
Moſcow	Ruſſia	55	45	20 N	37	46	15 E	2	31	5		

A *New Geographical* TABLE of *Latitudes*, *Longitudes*, and alſo *Tides*, of *Places*, continued *alphabetically*. For the *Uſe* of *Seamen*.

PLACES *Names.*	Countries on *Coaſts* or in *Provinces.*	Latitude.			Longitude.						High Water at New and Full ☽.	
					Degrees.			Time.				
		°	′	″	°	′	″	h	m	s	h	m
Moulins	France	46	34	4 N	3	20	0 E	0	13	20		
Nancy	France	48	41	28 N	6	11	30 E	0	24	46		
Nangaſachi	Capital of Japan	32	32	0 N	128	46	15 E	8	35	5		
Nantz	France	47	13	17 N	1	33	45 W	0	6	15	3	0
Naples Royal College	Italy	40	50	45 N	14	13	45 E	0	56	55		
Narbonne	France	43	11	13 N	3	0	15 E	0	12	1		
Nice	France	43	41	54 N	7	17	15 E	0	29	9		
Nieuport	Flanders	51	7	41 N	2	45	0 E	0	11	0		
Ningpo	China	29	57	45 N	120	18	0 E	8	1	12		
Niſmes	France	43	50	35 N	4	21	15 E	0	17	25		
Noyon	France	49	34	37 N	3	0	45 E	0	12	3		
Nuremberg	Germany	49	26	55 N	11	4	0 E	0	44	16		
Olinde	Braſil	8	13	0 N	35	1	0 W	2	20	4		
St. Omer's	Netherlands	50	44	46 N	2	15	0 E	0	9	0		
Orleans *Old*	France	47	54	4 N	1	54	15 W	0	7	37		
Orleans *New*	Louiſiana	29	57	45 N	89	58	45 W	5	59	55		
Oſtend	Flanders	51	13	55 N	2	55	0 E	0	11	40		
OXFORD	England	51	45	0 N	1	16	0 W	0	5	4		
Padua	Italy	45	22	26 N	11	55	30 E	0	47	42		
Panama	Mexico	8	57	48 N	80	21	0 W	5	21	24		
PARIS Obſerv.	France	48	50	14 N	2	20	0 E	0	9	20		
Pau	Switzerland	43	15	0 N	0	9	0 W	0	0	36		
Paul St. de Leon	France	48	40	55 N	4	0	15 W	0	16	1		
PEKIN City	China	39	54	0 N	116	22	30 E	7	45	30		
Perinaldi	Italy	43	53	20 N	7	40	0 E	0	30	40		
Perpignan	France	42	41	55 N	2	54	0 E	0	11	36		
PETERSBURG	Ruſſia	59	56	0 N	30	20	0 E	2	1	20		
Petit-Goave	Iſl. Hiſpaniola	18	27	0 N	72	33	45 W	4	50	15		
Plymouth Town	England	50	26	0 N	4	18	51 W	0	17	15	6	0
— *Ram Head*		50	23	0 N	4	22	25 W	0	17	30		
— *Edyſtone*		50	12	0 N	4	25	58 W	0	17	44		
Pondicherry	India	11	56	30 N	75	7	30 E	5	0	30		
Porto Bello	New Spain	9	33	5 N	79	50	0 W	5	19	20		
PORTSMOUTH	England	50	49	0 N	1	5	0 W	0	4	20	12	30
Prague	Bohemia	50	4	30 N	14	45	0 E	0	59	0		
Pulincondo Iſl.	Gulf Siam	8	40	0 N	107	20	0 E	7	9	20		
QUEBEC	Canada	46	55	0 N	69	53	0 W	4	39	32	6	0
Quito	Peru	0	13	17 S	77	55	0 W	5	11	40		
Rakah *Antient*	Meſopotamia	36	1	0 N	38	50	0 E	2	35	20		
Reims	France	49	14	36 N	4	3	0 E	0	16	12		
Rennes	France	48	6	45 N	1	42	0 W	0	6	48		
Rimini	Italy	44	3	43 N	12	34	15 E	0	50	17		
Rhodes	France	44	21	0 N	2	34	15 E	0	10	17	11	15
Rochelle	France	46	9	43 N	1	15	45 W	0	5	3	3	45
Rodrigues	Madagaſcar	19	40	40 S	63	10	0 E	4	12	40		
ROME, St. Pet.	Italy	41	53	54 N	12	29	15 E	0	49	57		

A New Geographical TABLE of *Latitudes*, *Longitudes*, and also *Tides*, of Places, continued *alphabetically*. For the *Use* of *Seamen*.

PLACES *Names*.	Countries on *Coasts* or in *Provinces*.	Latitude.			Longitude.						High Water at New and Full ☽.	
					Degrees.			Time.				
		°	′	″	°	′	″	h	m	s	h	m
Rotterdam	Holland	51	56	0 N	4	28	15 E	0	17	53	3	0
Rouen	France	49	26	43 N	1	5	15 E	0	4	21	1	15
Sable Cape	New Scotland	43	24	0 N	65	30	0 W	4	22	0		
Salonique	Turkey	40	41	10 N	23	8	0 E	1	32	32		
Scilly If. St. Agnes Light-hou.	England	49	56	0 N	7	14	0 W	0	28	56	3	45
Seez	France	48	36	21 N	0	9	45 E	0	0	39		
Sens	France	48	11	56 N	3	17	0 E	0	13	8		
SHERBURN Ca.	England	51	39	25 N	1	0	0 W	0	4	0		
Si-nghan-fu	China	34	16	30 N	108	43	45 E	7	14	55		
Smyrna	Natolia	38	28	7 N	27	19	45 E	1	49	19		
Soiſſons	France	49	22	32 N	3	19	30 E	0	13	18		
Stalbridge	England	50	57	0 N	2	23	30 W	0	9	34		
Start Point	England	50	9	0 N	3	51	15 W	0	15	25		
STOCKHOLM	Sweden	59	20	31 N	18	2	45 E	1	12	11		
Straſburg	Germany	48	34	35 N	7	46	15 E	0	31	5		
Tarbes	France	43	14	2 N	0	3	30 E	0	0	14		
Tenerif Pike	Canaries	28	12	54 N	16	32	0 W	1	6	8	3	0
St. Thomas Iſl.	Virgin Iſles	18	21	55 N	64	33	0 W	4	18	22		
Timon Pulo Iſl.	Gulf Siam	3	0	0 N	104	25	0 E	6	57	40		
Toboliki	Ruſſia	58	12	18 N	68	12	45 E	4	32	51		
Torneа	Sweden	65	50	50 N	24	12	0 E	1	36	48		
Toulon	France	43	7	24 N	5	56	30 E	0	23	46		
Toulouſe	France	43	35	54 N	1	26	15 E	0	5	45		
Tours	France	47	23	44 N	0	41	15 E	0	2	45		
Tripoli	Barbary	32	53	40 N	13	5	15 E	0	52	21		
Turin	Italy	45	5	20 N	7	40	0 E	0	30	40		
Upſal	Sweden	59	51	50 N	17	41	15 E	1	10	49		
URANIBERG	Denmark	55	54	15 N	12	52	30 E	0	51	30		
Valparais	Chili	53	2	36 S	72	19	15 W	4	49	17		
Venice	Italy	45	25	0 N	12	4	30 E	0	48	18		
Vera Cruz	New Spain	19	12	0 N	97	30	0 E	6	30	0		
Verdun	France	49	9	18 N	5	22	45 E	0	21	31		
Verona	Italy	45	26	26 N	11	18	30 E	0	45	14		
VERSAILLES	France	48	48	18 N	2	7	15 E	0	8	29		
Capé Verd	Negroeland	14	43	0 N	17	10	0 W	1	8	40		
VIENNA *Imp. Obſervatory*	Germany	48	12	48 N	16	22	30 E	1	5	30		
Vintimiglia	Italy	43	53	20 N	7	37	30 E	0	30	30		
Virgin Gorda Ft	Weſt Indies	18	18	0 N	64	0	0 W	4	16	0		
Virgin's Cape	Patagonia	52	26	0 N	71	5	0 W	4	44	20		
Wakefield	England	53	41	0 N	1	33	30 W	0	6	14		
Wanſtead	England	51	34	0 N	0	2	30 E	0	0	10		
Wittenberg	Germany	51	43	10 N	12	33	30 E	0	50	14		
Ylo	Peru	17	36	15 S	71	13	0 W	4	44	52		
YORK	England	53	59	0 N	1	6	40 W	0	4	27		
New York	New England	40	43	0 N	74	9	0 W	4	56	36		

A large and general *alphabetical* TIDE-TABLE, (for the USE of SEAMEN:) Shewing the *Time* of HIGH-WATER at feveral *Sea Ports* and *Places*, at *New* and *Full Moon*. Whence the Time of *High Water* is found on any Day of the Month, or Age of the *Moon*, from her Southing.

Places Names.	T. H. Water	*Places Names*	T. H. Water	*Places Names.*	T. H. Water	*Places Names.*	T. H. Water
	h m		h m		h m		h m
ABERDEEN	0 45	*Briſtol Key*	6 45	*Dunnoſe*	9 45	Hamborough	6 0
Abermorith	6 0	Brovage with	3 45	Dunwich	9 45	Hampton key	0 0
Aberwark	4 30	Buchaneſs	3 0	Edam	1 30	Harborough	6 0
Abroth	3 15	*Boulogne*	10 30	*Edinburgh*	4 30	Harfleur	8 0
Africa W. Co.	3 0	*Buoy of Nore*	1 0	Egmon	4 30	Haerlém	9 0
Aldborough	9 45	*Caen, Norm.*	9 0	Eider	0 0	*Hartlepool*	3 0
Amazon's R.	6 0	Caldy	5 15	Elbe	0 0	*Harwich*	11 0
Ambleteuſe	11 0	*Calais*	11 30	*Embden*	0 0	*Haſtings*	10 30
Amer W. Co.	3 0	Calſhot	11 15	Emes	9 0	*Havré de Gr.*	9 0
—— F. Coaſt	4 30	Camvere	1 30	Emes Entr.	7 30	*St. Helen's*	10 30
Amſterdam	3 0	Canary Iſles	3 0	Enchuſen	0 0	Hern	0 0
Andrew, St.	2 15	Cancale	6 0	Engomonts	9 0	Hever	0 0
Antwerp	6 0	Cape Blanco	9 45	Eſtaple	11 0	Helms	6 0
Apenars	12 45	— Cantin	0 0	*Exmouth*	6 20	*Holy Head*	1 30
Apenmark	2 15	— Clear	4 30	Exwater	7 30	Home Head	9 0
Archangel	6 0	— De Four	2 45	Fair Iſle	0 0	Honfleur	9 0
Armentiers	3 0	— *Good Hope*	3 0	F. Iſle Roads	11 15	Horn	1 10
Army	1 30	Sierre de Lion	8 15	*Falmouth*	5 30	*Hull*	6 0
Audiern, *Fr.*	2 15	Carmarth n B.	5 15	Fen, in E. Ch.	1 30	*Humber Mo.*	5 15
Auray, *Fr.*	3 45	Caſkets with	8 15	Feſcan	9 45	*Huncliff Foot*	3 45
Bajador, Bar.	0 0	— within	9 45	Finkmark C.	1 30	John de Luce	10 30
Baltimore, Ir.	4 30	Catneſs	9 0	*Flamborou'* H.	4 0	*Ireland*, S Co.	5 15
Barfleur, Fr.	8 0	Chamberneſs	9 45	Flanders Bks.	1 0	—— W. Co.	3 0
Baſs without	3 45	Cherburgh	7 30	*Florida*	7 30	*Jutland* Iſle	0 0
Bayonne, *Fr.*	3 30	*Chili* Coaſt	3 0	Fluſhing	1 0	*Kent*, Knock	0 0
Beachy	0 0	Concarneau	3 0	The Fly	7 30	Kildive	9 0
Beauvoir, *Fr.*	3 15	Condado	0 0	Fontenoy Ra.	2 15	Kilduyn	7 30
Bell Iſle	3 30	Conquet, *Fr.*	2 15	*Foreland* N & S	9 45	Kildare	3 0
Berguer	1 30	*Cork*	6 30	Forn	5 15	*Kinſale*	5 15
Bermudas	7 0	*Corp. Chriſ.* Pt	1 30	*Foulneſs*	6 45	Lambag	8 15
Berwick	1 39	*Cowes*	10 30	*Fowey*	5 30	*Landſend*	7 30
Biſcay Coaſt	3 0	Croyl	11 15	Fran. W. Co.	3 0	Lanion	6 45
Blackneſs	1 30	*Cromer*	7 0	Firth	11 0	Lawreneſs	4 30
Blackney	6 0	*Dartmouth*	6 30	Frieſland Co.	7 30	*Leith*	4 0
Blacktail Ba.	0 15	*David's Head*	6 0	*Gallicia*	3 0	Lenow	9 45
Blanket Race	0 0	*Deal*	10 30	Garande	3 0	*Leoſtoff*	9 45
Blavet	3 0	Denbigh	2 15	Garonne Mo.	3 0	—— *Road*	10 30
Bloy	4 30	Deſire Port	0 0	Gaſcoigne Co.	3 0	*Lime*	7 0
Bluetwithout	2 15	*Dieppe*	10 30	*Gibralter* Ro.	0 0	*Liſbon*	2 15
Bourdeaux	6 0	Dort	3 0	*Gouries* Gut	2 30	*Lizard*	7 30
Braſil Coaſt	4 30	*Dover*	11 30	Goree	1 30	*London*	2 30
Bremen	6 0	*Downs*	1 15	Gorend	11 15	Longland H.	10 30
Bree Sound	4 30	*Dublin* Bar	9 15	Granville	6 45	*Loo*	6 0
Breſt	3 45	—Cuſt. houſe	11 0	Gravelling	0 0	Loir Mouth	3 0
Britain S. Co.	3 0	Dunbar	2 0	*Graveſend*	1 30	Lundey	5 15
Bridgewater	7 40	Dundee	2 15	Groyne	3 0	*Lynn, Norfolk*	6 0
Bridlinton P.	4 0	Dungarven	4 30	*Guernſey*	1 30	*Lynn* with	5 15
Brill	1 30	*Dunkenneſs*	9 45	Gunfleet	10 30	Mackwel Ca.	8 15
Briſtol	6 30	*Dunkirk*	12 0	*Hague*	8 15	*Manſe*	3 0

A large and general *alphabetical* TIDE-TABLE, (for the Use of SAAMEN,) continued.

Places Names.	T. H. Water	*Places Names.*	T. H. Water	*Places Names.*	T. H. Water
	h m		h m		h m
MagnesSoun.	8 15	Rhodes	11 15	Staples	3 45
Malden	12 45	*Robin Hood's* B	3 0	Start	6 45
St. Maloes	6 0	Rochel	3 45	*Stockton*	5 15
Man Isle	9 0	Rochford	4 15	Swin	0 0
MargaretRo.	11 15	*Rochester*	0 45	*Tees* Mouth	3 0
St. Mark	2 15	Rohan	3 45	*Tenerif Pike*	3 0
StMatth.'sPt	3 45	Rosis	5 15	Tenet	1 30
Memisian	3 30	*Rotterdam*	3 0	Terveer win.	0 45
Milford and		*Rouen*	1 15	——without	1 30
Moonless	5 15	*Romney*	1 30	Tergon	9 45
Milford Hav.	7 30	*Rye*	11 15	Texel	7 0
Morhtham	3 0	St. *Andrew's*	2 15	Texel Cliffs	5 0
Mount's Bay	4 30	— Auguftine		*Thames* Mo.	1 30
Mouschole	4 30	*Florida*	7 30	*Tinmouth*	6 0
Nantz River	3 0	—David's H.	6 0	*Topsham*	6 0
Naze	11 15	— *Helens*	10 30	Torbay	6 0
Needles	10 0	—JohndeLutz	3 30	Treport	10 30
Newcastle	3 15	— Lucas	2 15	Vannes	3 45
Newport, Isle		— Maloes	5 30	Voard	4 30
of Wight	0 0	— Mark	2 15	Vreck	0 0
StNich.Ruff.	6 45	—Matth Pt.	3 45	Use	3 0
Nore, W.End	0 0	— Michael	5 30	Ushant with	4 30
Normandy Co.	10 30	—Nich.(Ru)	6 45	*Wales*	5 15
North Cape		— Pol deLeon	4 0	Wash, Linc.	6 30
Magero	3 0	— Powls	6 0	Waterford	6 30
Ollone	3 15	— Valleri	9 45	Weilands	1 30
Orfordness	10 30	— Salcomb	6 0	Wells	6 0
Orkneys	6 0	*Sandwich*	11 30	*Weymouth*	7 0
Orwell	9 0	*Scarborough*	3 45	——— *Key*	6 45
Ostend	0 30	*Scilly Islands*	3 45	*Whitby*	3 0
Pennes, *Fr.*	3 45	Sedmouth	6 45	Wieringham	7 0
Peru Coast	3 0	*Senigal*	10 30	*Wight*, Isle	0 0
Peter Port	8 15	Seven Cliffs	9 0	*Winchelsea*	12 45
Picardy Coast	10 30	Seven Isles	4 30	*Winterton*	8 0
Plymouth	6 0	*Severn's* Mo.	6 0	Yarm	6 45
Podesemsh	6 45	*Seine's* Mo.	9 0	*Yarmouth*	10 0
Poictou, S.Co.	3 0	*Sheerness*	0 0	—— Roads	10 30
Port Blank	4 15	Shelbergh	9 0	Youghall, Ir.	4 30
Porthus	3 0	*Shetland*	3 0	*Zeland* Coast	1 30
Portland	8 30	*Shoe Bacon*	0 30	*Zerick* Sea	3 0
Portugal Co.	3 45	Shoreham	10 30		
Portsmouth	12 30	Sleeve	0 0		
Quebec	6 0	Somme Mo.	11 0		
Queenborough	0 0	*Sound*	3 45		
Ramekins	1 30	Southampton	0 0		
Ramsey	5 15	*Spain*, W.Co.	3 0		
Rebdan	12 45	*Spithead*	11 30		
Redsand	0 30	Spits	0 0		
Rhee Island	3 0	*Spurn*	5 15		

To find the Time of High Water at a given Time and Place.

RULE. By the foregoing Tide-Table, find the Time of high Water or full Sea, on the Day of *Full* or *Change* of the *Moon*, for the *Place* given; then add to which the Time of the Moon's Southing, on the *given Day* of the Month, and the *Sum* will be the Time of *High Water*, required.

EXAMPLE. *To find the Time of High Water at* London-Bridge, *on* April 13 1765.

	h	m
T. of H.W. at *N.&F.* ☽	2	30
By *Tab.* P. 107, *Apr.* 13, 1765, ☽'s Sou.	6	52
H.W. *Lon.*	9	m22

To find the near Time of ☽*'s Southing arithmetically.*

Rule. Multiply her Age by 8 Tenths, for the Hours and Decimals of Southing.

Exam. April 13. 1765, the Moon's Age 24 Days.

,8

19,2

	h	m
	7	m12
H. W. *Lon.*	2	30
H.W. reqd. nearly as before.	9	m42

So for other Cases.

N. B. *High Water is at the Time of the Moon's Southing, where it happens at* 0, *or* 12, *New and Full Moon.*

TABLE of the MOON's *Southing*, or when she passes the Meridian of *Greenwich* Observatory, 1765. For the Use of SEAMEN.

D.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
1	7 42	8 40	7 24	8 44	8 59	10 8	10 53	Morn.	1m 3	1m 20	2m 35	2m 55
2	8 27	9 33	8 17	9 31	9 46	11 9	11 59	0 44	1 49	2 7	3 27	3 43
3	9 15	10 25	9 8	10 17	10 36	Morn.	Morn	1 35	2 33	2 56	4 18	4 28
4	10 6	11 16	9 58	11 3	11 29	0 16	1 10	2 22	3 19	3 46	5 7	5 9
5	10 56	Morn.	10 46	11 53	Morn.	1 28	2 9	3 7	4 7	4 38	5 54	5 52
6	11 48	0 5	11 34	Morn.	0 29	2 33	2 59	3 51	4 56	5 30	6 39	6 32
7	Morn.	0 54	Morn.	0 45	1 35	3 33	3 48	4 35	5 47	6 21	7 23	7 15
8	0 42	1 38	0 20	1 40	2 42	4 26	4 32	5 19	6 38	7 10	8 5	8 1
9	1 32	2 24	1 7	2 42	3 48	5 17	5 15	6 8	7 30	7 58	8 49	8 52
10	2 18	3 8	1 54	3 45	4 49	5 59	5 59	6 57	8 21	8 43	9 33	9 43
11	3 3	3 57	2 46	4 51	5 45	6 41	6 41	7 48	9 10	9 27	10 23	10 45
12	3 46	4 47	3 44	5 53	6 35	7 23	7 26	8 39	9 56	10 11	11 14	11 50
13	4 30	5 42	4 43	6 52	7 22	8 6	8 14	9 30	10 42	10 57	0a14	0a56
14	5 15	6 45	5 46	7 44	8 5	8 49	9 3	10 21	11 27	11 45	1 17	2 1
15	6 3	7 47	6 48	8 33	8 47	9 34	9 53	11 12	0a10	0a33	2 22	3 3
16	6 56	8 49	7 50	9 18	9 29	10 21	10 44	11 55	0 56	1 29	3 26	3 57
17	7 55	9 52	8 47	10 1	10 11	11 11	11 35	0a38	1 42	2 29	4 28	4 47
18	8 57	10 48	9 36	10 41	10 54	0a 2	0a23	1 23	2 34	3 33	5 27	5 34
19	10 3	11 40	10 26	11 26	11 40	0 53	1 10	2 6	3 30	4 36	6 15	6 17
20	11 7	0a 6	11 11	0a 8	0a28	1 43	1 56	2 51	4 30	5 38	7 2	7 0
21	0a 7	1 11	11 56	0 55	1 19	2 30	2 39	3 38	5 32	6 36	7 46	7 44
22	1 2	1 55	0a37	1 41	2 10	3 16	3 20	4 30	6 35	7 30	8 30	8 29
23	1 53	2 38	1 21	2 31	3 1	4 0	4 4	5 25	7 36	8 19	9 13	9 17
24	2 37	3 21	2 5	3 22	3 50	4 42	4 49	6 26	8 33	9 5	9 58	10 6
25	3 20	4 5	2 51	4 13	4 38	5 26	5 38	7 29	9 26	9 50	10 44	10 56
26	4 1	4 51	3 40	5 5	5 23	6 10	6 31	8 32	10 16	10 34	11 32	11 47
27	4 44	5 41	4 31	5 54	6 8	6 56	7 28	9 34	11 2	11 19	Morn.	Morn.
28	5 28	6 32	5 22	6 42	6 52	7 47	8 32	10 32	11 49	Morn.	0 23	0 39
29	6 12		6 14	7 28	7 38	8 45	9 49	11 25	Morn.	0 3	1 15	1 26
30	6 58		7 5	8 13	8 21	9 43	10 43	Morn.	0 33	0 53	2 6	2 13
31	7 49		7 55		9 13		11 44	0 16		1 43		2 54

To find the Time of High Water, at any Place, on any Day of the Month.

RULE. To the Time of the Moon's Southing, from the above Table, for that Day, add the Time of *High Water* at *New* and *Full*, in that Place, (from *Tab.* P. 105, 106,) and the Sum (abating 12 when above 12 Hours) will be the Time of *High Water*, required.

EXAMPLE. *To find the Time of* High Water *at* Dover, *on* April 16, 1765.

From above, the Moon souths on that Day, 9h 18m Morn.

To which add Time H. W. at *Dover*, at *New* and *Full*, fr. P. 105, 11 30

Sum (abating 12) the Time of High Water required 8 48

N. B. Where Morn *is printed in the Columns, the Moon souths not for that Day, according to the Paradox answered P.* 25, Pal. 1764.

And when there is an Hour Difference in the Moon's Southing in a Day, it gives but 10 Seconds Diff. Southing for 1 Deg. Diff. Long. or 1m Dif. for 6o Dif. Long. — Shewing that the Difference of Longitude cannot be truly determined from the Time of the Moon's Southing, observed at a Place far *East* or *West* of *Greenwich*.

Time of the MOON's Southing.

H.	0m	10m	20m	30m	40m	50m
	High Water at *London*, by Sir *I. Newton*.					
12	3h0m	3h9m	3h18	3h27	3h36	3h40
1	3 54	4 2	4 9	4 16	4 23	4 36
2	4 37	4 44	4 50	4 57	5 3	5 9
3	5 15	5 21	5 27	5 33	5 40	5 46
4	5 52	5 59	6 6	6 13	6 20	6 28
5	6 36	6 44	6 53	7 2	7 11	7 20
6	7 30	7 40	7 52	8 4	8 15	8 25
7	8 36	8 48	9 0	9 13	8 26	9 39
8	9 52	10 6	10 20	10 33	10 47	11 1
9	11 15	11 29	11 43	11 57	12 10	12 24
10	12 37	12 50	1 3	1 16	1 29	1 42
11	1 54	2 3	2 16	2 27	2 38	2 49

Example. When the ☽ ſouths at 9h 30m, againſt 9h on the Side and under 30m at Top, ſtands 11h 57m, High Water.

Our redundant Materials obliged us to exclude the Solution to Qu. XV. till next *Pal.* or *Sup.* But ☉ in ♎ 4m bef. Noon, bef. *Chr.* is in ♎ 6s 0o 0′ 10″ at Noon. — Whence, by Method, P. 64, 65, *Pal.* 1764, the Anſwer is eaſily found. And ☉ in ♎ 1m bef. Midnight ſince *Chr.* is in ♎ 6s 0o 0′ 2″½ at Midnight. Or, ☉ in ♎ 2m before Midnight, before *Chriſt*, is in ♎ 6s 0o 0′ 5″ at Midnight. — Whence ſeveral Anſwers eaſily follow.

Errata. P. 70, L.* 29, *for* ☉ as to, *r.* ſo as to.

P. 71. L. 7, *for* Preceſſion, *r.* Preciſion.

To the MOON-PEEPERS *and Longitude* TIME-KEEPERS.

Two Minutes in Degree if you miſ-ſpy,
(*And who can peep out* Latitude *ſo nigh?*)
Two miſcompute; *twice two*, in Time, be croſt,
Then all your Credit, Time, and Gain, are loſt!

BOOKS *lately publiſhed by Mr.* EMERSON, *and ſold by Mr.* Nourſe, *in the* Strand.

1. *NAVIGATION.* Real ſecond Edition, with Additions and Corrections, improved in many Reſpects.

2. *Trigonometry.* Real ſecond Edition, with ſeveral Additions and Improvements, and Tables of *Logarithms* and *natural Sines and Tangents* added, to render the Work complete.

3. *Treatiſe of Algebra.* New. Containing the *beſt* Methods and Things extant on the Subject; like all the Reſt of his Works.

LIST *of the* Lunar PROFESSORS *of* SCIENCE. *By* Academicus.

Noms et Characteres des MESSIEURS *de l'Academie* Lunaire *des Sciences.*

Creations en l'Année *Profeſſeurs.*

1763. *M. de Kende*, Lecteur, Docteur, et Profeſſeur, au College Lunaire; Membre de la Societé dogmatique de Londres; et de l'Academie chronologique, des Inſtituts de la Dégradation des bons Profeſſeurs, des Chevaliers *Newton*, *Halley*, *Keil*, *&c.* Premier Profeſſeur d'Aſtronomie en l'Academie Lunaire, et Profeſſeur premier des Abſurdités. *Star bon. Chriſtiano.*

1764. *M. de Bainſyde*, Chevalier de l'Ordre de la Societé Lunaire, et Profeſſeur et Impoſteur en Ordinaire d'Aſtronomie; Membre de la Societé dogmatique et pedantique de Londres; et inferieur Profeſſeur des Abſurdités.

M. de Reverie, Avocat, et Profeſſeur des Periodes ſolaires.

M. de Furgon, Docteur et Profeſſeur rationel de la Societé lunaire, et Lecteur itinerant de la Philoſophie naturelle.

M. de la Riſſion, Profeſſeur grammatical, et Docteur des Cathartiques, Emetiques, Botaniques; auſſi de Chimie, des Critiques, des Satellites, des Stellaires, des Aſtronomes, des Potatoes, des Staecatoes, *&c.*

Pour la Mechanique.

M. d'Ardia, Profeſſeur des Syphons.

M. Vilſon de Nouveau Caſtel, Docteur et Profeſſeur des Abſurdités.

M. le Clerc, Profeſſeur des Nouveautés.

Pour

Pour l'Hydroſtatique.

M. de Beverly, Profeſſeur des Impoſſibilités.

Pour la Mathematique et la grande Science des Fluxions.

M. de Roe, Docteur et Profeſſeur des Extraordinaires.

Pour la Geometrie.

M. d'Undone, Docteur et Profeſſeur des Merveilles.

M. du Palladium, Inſpecteur et Correcteur general des Arts, Sciences, Erreurs, Abſurdités, et Blondres. *(To be continued.)*

WE hope that our Correſpondents will excuſe us for omitting to inſert their ſeveral Productions concerning their *Hand-bill Packets*, received by the Poſt from their unknown Town Correſpondents, *without Names*. As their Letters will make about two middle-ſized Volumes in 12mo, they will ſerve for a *Novel*, and may be called *The Hornet's Neſt, or* JUSTICE *provoked*: Wherein all ſuch *Town Artifices* are laid open, as have hitherto eſcaped the Hands of *Juſtice*.

We acknowledge the Receipt of a *threatening Letter*, ſigned *J. R.* to acquaint a Perſon of Honour of our interrupting a *Set of Fellows*, getting their Livelihood by as *honeſt* Endeavours as they could, *(who waited for an Opportunity to ſend them to a Place fitteſt for them,)* telling us to beware! — inſiſting on our meeting them: Though *Knights of the Poſt* are more dangerous than uſing Weapons of *Juſtice!*

The *Farce* in 3 Acts (intitled *The Charms of* MOLL ROE, *and* BALLANCE *the* BEAU) by *Candidus Criticus*, we have not Room for at Length; but refer our Readers to the Stage, where they may expect to ſee it acted in all its proper Characters! *humourous, ſatyrical, polite*, and *moral*.

In this *Farce*, Signor *Don Lorenzo Magiſtro Flagellatorio Champanzienzo*, univerſal Profeſſor, lately arrived *à Paris*, teaches all human Accompliſhments in three diſtinct Leſſons, for 5 *Guineas* each Leſſon, in 24 Hours, at his Academy in *Buzzard's Buildings*; or at Gentlemen and Ladies own Houſes, if required; without the Trouble to Maſter or Scholar of teaching their *Eſſentials*.

Docteur de Baboon, Profeſſor of inferior Arts, aſſiſts *Signor Don Champanzienzo* in teaching *French, Spaniſh, Portugueze, Italian, Barbarian, Hottentot*, and *Caffres*; *Dancing, Muſic, Fencing, Horſemanſhip*, &c. to complete the other academical Accompliſhments. Who *(his ownſelf)* teaches his Short-hand, without Method, *gratis*.

Monſieur de Jacko Hypercritico profeſſes to teach all the ſame human Accompliſhments without *Ideas*, in one Hour, for one *Guinea* each Leſſon, that Signor *Champanzienzo* takes 24 to perform; who is but a mere Pretender to Science. — He alſo teaches *Buffoonery* and *Taking off* (as it is vulgarly called) *gratis*. He has taken off an *eminent Mathematician*, and the *Palladium-Author, gratis*; and will take off his Friend Mr. *Foote* before a numerous and ſplendid Audience, at his Academy in *Magpie-ſquare*, near *Beddeford-Row*.

The other extraordinary Perſons of the *Drama* (Sir *Jaffier*, *Ballance* the Beau, Lady *Roe*, Mrs. *Budget*, Mr. *Whipperſnapper*, *Bidde*, *Brim*, *Tim*, *Trim*, *Trip*, *Filch*, *Trapes*, *Trot*, *Tatter*, little *Trinculo*, Servants, and Attendants,) perform Wonders!

The ſame *Correſpondent* informs us, that *le Docteur Hypercritic* is of Opinion, that *faſhionable Amuſement* (at P, ii. L. 25, *Pall. Preface* 1764) is an *inſufferable* Impropriety; becauſe the Great are original Patterns and not Followers of Faſhion. L. 11. *fr. Bot.* ſame P. ' *Science* have' ſhould be ' *Sciences* have'; becauſe no Nominative Caſe ſingular can agree with an auxiliary, or any other, Verb plural. — Who *(le meme Docteur)* has with *Lincean* Sight diſcovered 7 falſe *Punctuations* in *Pal.* 1764 — *for which candid Correction we are under infinite Obligation.* — Who has likewiſe lately diſcovered that the greateſt *Merit* in the *Royal Aſtronomer and Navigator* is in the *Elegance* of its Printing: On which Account *le fameux Docteur de la Riſion* has given it a Place on his *own Shelf*, next to *Stellagraphia Britannica* of immortal Memory!

REMARKS

REMARKS *on Mr.* HARRISON's PROCEEDINGS *with his* WATCH, *for determining the* Longitude, *in his late Voyage to* Barbadoes.

(*See P.* 23, Palladium Supplement, 1764.)

HE went abroad *February* 13, 1764, from *Surry Stairs* in the *Strand*, to *Barbadoes*, on the Trial of his *Time piece*, who (according to *Owen's Magazine* for *July* 1764) found it had gained 54 Seconds of Time, at his Return to *Surry Stairs*, *July* 18, 1764, during his Abſence of 156 Days. But in all this Time it does not appear that he proved the Equality of his Watch's Motion, nor does it appear any where that he proved the ſame Equality before his going Abroad.—*What then can be depended on from this Voyage?* — His Trial of his Watch by his *own Regulator*, (not ſo good as by the Tranſit Inſtrument and uniform Revolution of the fixed Stars, the *Regulator of Regulators*,) when it is ſaid to have gained 9 *Seconds* 6 *Tenths* in 8 *Days*, is no Proof of the Equality of its Motion, (or Merit of a *Time-piece*,) the *principal Thing to be proved*; ſuppoſing the different Effects of *Heat* and *Cold*, *Wet* and *Dry*, *Gravity*, and *Shocks* of the Ship's Motion, to be provided for; which we find are not. For after Mr. *Harriſon* had examined the Going of his Watch, and adjuſted it by his *own Regulator*, it ſeems he re-adjuſted it by Mr. *Short*'s more infallible one, and found it $2\frac{1}{2}$ Seconds ſlow of mean Time. Who arriving at *Portſmouth*, he found (and not before) it gained 0, 1, 2, 3, Seconds a Day, according as *Fahrenheit*'s Thermometer ſtood at 72, 62, 52, and 42, *reſpectively*; and loſt 1 Second a Day when it ſtood at 82; though it had before been all along pretended that the Effects of Heat and Cold, or different Conſtitutions of the Air, were provided for by the ſame Principles as in the *Gridiron Pendulum*, of a Clock.

Mr. *Harriſon*'s ſeveral *Predictions* of making *Porto Santo*, *Barbadoes*, and the *Scilly Iſlands* at his Return, are thus ſupported. — The Difference of Longitude of *Porto Santo*, *Barbadoes*, and of *Scilly Iſlands*, from any known Place, is uncertain, or in Darkneſs, and therefore his *Predictions* of their *Diſtances* from the Ship, whoſe *Difference of Longitude* is given by the Watch, muſt be uncertain, or in Darkneſs. And the Diſtance of Places from the Ship (ſuppoſing its Difference of Longitude from a given Place to be correctly known by the Watch) depends on 3 more Articles, *viz.* the Ship's Latitude, and the Latitude and Longitude of the Place bound to; being the *Navigator*'s Province to reſolve, as a *Problem*, and not Mr. *Harriſon*'s. When (in one of my three Voyages to the *Weſt Indies*) we made Land in the Day-Time in our Voyage to *Barbadoes*, we did it by this Method. We got into its Latitude, and then ran down *our Diſtance* (ſteering due *Weſt*, as is the uſual Cuſtom) till we ſaw it, and running in with the Iſland at about 3 Leagues or 9 Miles Diſtance, that Evening, we lay-to till Day-break, and then we ran into *Carliſle Bay* and came to an Anchor. And if the *Tartar* did ſo, (without any Help required from a *Time-piece*,) ſhe avoided the Riſk of running by that ſmall Iſland, as Ships have frequently done, ſteering directly to it out of the Ocean by an uncertain Longitude. And the ſame Method is uſed in Places having *Eaſt Longitude* of the Ship, ſteering due Eaſt in the Place's Latitude (being always ſure of the *Difference* of Longitude of the Ship being leſs than that of the Place) till you find it; where no Rocks, Shoals, or Land, lie between to intercept the *Ship's Paſſage*.

N. B. Mayer's genuine Equation Tables in our *Royal Aſtronomer* are to be uſed with our mean Motions for *Greenwich*. His Tables (ſold) are made for *Paris Meridian*, in the *Radixes* or mean Places, and therefore are of no Uſe to us till altered as above. Hence the Miſtakes of Many, uſing *Mayer*'s Tables.

☞ We ſhall publiſh our accurate Improvements in aſtronomical Tables, notwithſtanding Mr. *Witchell*'s Tables coming out, Price 5*s.* (compriſable, like *Morris*'s, in a *few Palladium Pages*;) we having by ſuperior Intereſt acquired Corrections in aſtronomical Computation which no Authority can exceed. — There are 3 Sorts of Aſtronomers: The *obſerving* or *peeping*, *theoretical* or *prating*, and *computing*, *practical*, or *real*.—Mr. *Witchell*, as one of the beſt, we wiſh to ſee *aſtronomical Profeſſor* at *Greenwich*, when Occaſion offers.

A

TABLE for finding the Difference of LONGITUDE from *Greenwich Ray Obſervatory*, by the Difference of Time between any Eclipſe of the firſt Satelli of *Jupiter* at *Greenwich*, happening there at Times as beneath, and the Time t ſame *Eclipſe* is obſerved to happen under a diſtant Meridian: The Differen of which *Times* being turned into *Degrees*, will be the *Difference of Longitude betwe* Greenwich *and the Place of Obſervation*.

Times of the ECLIPSES of the firſt SATELLITE of JUPITER, for 1765, N. at *Greenwich* Obſervatory.

	January.			February.			March.			April.			May.			June.	
	Immerſin.			Emerſion.			Emerſion.			Emerſion.			Emerſion.			Emerſio	
D.	h m s		D.	h m s		D.	h m s		D.	h m s		D.	h m s		D.	h m	
2	16*49 8		1	20 59 51		2	4 40 41		1	6 57 44		1	9*13 3		2	5 59	
	Emerſion.		3	15*28 18		3	23 9 46		3	1 26 58		3	3 42 5		4	0 17	
6	7*58 24		5	9*56 47		5	17 38 53		4	19 56 14		4	22 11 2		5	18 46	
8	2 26 13		7	4 25 20		7	12* 8 1		6	14 25 29		6	16 39 56		7	13 14	
9	20 54 4		8	22 53 54		9	6*37 11		8	8*54 44		8	11* 8 47		9	7 42	
11	15*21 57		10	17 22 34		11	1 6 23		10	3 23 57		10	5 37 34		11	2 11	
13	21 49 52		12	11*51 18		12	19 35 46		11	21 53 10		12	0 6 21		12	20 39	
15	4 17 48		14	6*20 7		14	14* 4 51		13	16 22 21		13	18 35 6		14	15 7	
16	22 45 47		16	0 48 56		16	8*34 6		15	10*51 38		15	13 3 49			*Jupiter*	
18	17*13 49		17	19 17 47		18	3 3 17		17	5 20 40		17	7 32 31			now ſo	
20	11*41 53		19	13*46 40		19	21 32 30		18	23 49 48		19	2 1 10			near th	
22	6*10 c		21	8*15 36		21	16 1 43		20	18 18 53		21	8 29 46			Sun, th	
24	0 38 10		23	2 44 34		23	10*30 59		21	12 47 57		22	14 58 21			his 1ſt *S*	
25	19 6 23		24	21 13 33		25	5 0 19		24	7 17 0		24	9*26 53			*tellite* ca	
27	13*34 40		26	15*42 34		26	23 29 40		26	1 46 2		26	3 55 24			not be ſe	
29	8* 3 1		28	10 11 36		28	17 59 2		27	20 15 4		28	10 23 54			nor any	
31	2 31 28					30	12 28 18		29	14 44 6		29	16 52 24			his othe	
												31	11 20 '53			3 Satel.	

	July.		Auguſt.		September.			October.			November.			Decemb	
					Immerſin.			Immerſin.			Immerſin.			Immerſi	
	The *Aſteriſm* (*) is placed againſt the viſible Eclipſes of the 1ſt *Satellite* at *Greenwich*. *N. B.* When the Hrs. next to the Ds. are above 12, you muſt conſider thoſe *Eclipſes*		happening in the Morning or Forenoon of the next Day, as much as thoſe Hrs are above 12, *viz.* the Eclipſe *Jan.* 25d 19h6m23s may be deemed 26d 7h6m 23s *Morning*.		D.	h m s		D.	h m s		D.	h m s		D.	h m	
					2	4 20 2		0	12 5 32		1	8 43 23		1	10*40	
					3	22 49 9		2	6 34 30		3	3 11 48		3	5 8	
					5	17 18 16		4	1 3 29		4	21 40 9		4	23 35	
					7	11 47 23		5	19 32 27		6	16* 8 29		6	18* 3	
					9	6 16 30		7	14* 1 25		8	10 36 47		8	12*31	
					11	0 45 37		9	8 30 22		10	5 5 4		10	6 58	
					12	19 14 44		11	2 59 18		11	23 32 18		12	1 26	
					14	13 43 42		12	21 28 12		13	18* 1 25		13	19 53	
					16	8 12 59		14	15*57 3		15	12 29 29		15	14*21	
					18	2 42 5		16	10 25 50		17	6 57 28		17	8*48	
					19	21 11 11		18	4 54 33		19	1 25 28		19	3 14	
					21	15*40 17		19	23 23 16		20	19 53 25		20	21 43	
					23	10 9 22		21	17 51 55		22	14*21 20		22	16*11	
					25	4 38 26		23	12 20 33		24	8 49 14		24	10*38	
					26	23* 7 29		25	6 49 11		26	3 17 6		26	5 6	
					28	17*36 32		27	1 17 48		27	21 44 54		27	23 33	
								28	19 46 23		29	16*12 39		29	18* 1	
								30	12*14 54							

Example. An *Eclipſe* of the firſt *Satellite* of *Jupiter* was obſerved to happen *January* 27d at 11h 24m 19s at Night, at Sea.

The ſame happened at *Greenwich* 27 13 34 40

The Diff. is the *Diff. Long.* in Time 2 10 21 or 32° 35′ 15″ the Sh was to the *Weſtward* of *Greenwich*; becauſe the Time of Obſervation was *ſoon* than the Time at *Greenwich* — when it is later, the Longitude of the Ship, Place of Obſervation, is *Eaſtward* of *Greenwich*.

1765.	Month and Week Days.						
The Dfe. Ag^t the Mth, above	1	2	3	4	5	6	7
the Wk-d. ſtand all the	8	9	10	11	12	13	14
Mth-ds. anſw^g thereto.	15	16	17	18	19	20	21
Alſo, under the Mth-day	22	23	24	25	26	27	28
ag^t the Mth, ſtands the	29	30	31				
Week-day correſpond.							
January. October.	t	w	th	f	ſ	S	m
Feb. Mar. April. Oct.	w	th	f	ſ	S	m	t
April. July.	th	f	ſ	S	m	t	w
May.	f	ſ	S	m	t	w	th
June.	ſ	S	m	t	w	th	f
Auguſt.	S	m	t	w	th	f	ſ
Septem. Decem.	m	t	w	th	f	ſ	S

Add to Month-day for the D's Age.		New D.	Full D.
Jan.	9^d	21	7
Feb.	10	19	5
Mar.	9	21	7
Apr.	10	20	6
May.	10	19	5
June.	12	18	3
July.	12	18	3
Aug.	13	16	1 30
Sept.	15	15	29
Oct.	15	14	28
Nov.	17	13	27
Dec.	17	12	27

Sun riſes.			
	1ſt	11th	21ſt
	8^h 5^m	7^h 56^m	7^h 45
	7 22	7 6	6 50
	6 32	6 12	5 52
	5 31	5 11	4 53
	4 35	4 20	4 4
	3 51	3 45	4 43
	3 40	3 54	4 4
	4 20	4 36	4 54
	5 15	5 32	5 54
	6 13	6 33	6 53
	7 12	7 30	7 45
	7 58	8 6	8 8

Example I. *To find the Day of the Month o the 1ſt* Sunday *in* June.

Againſt *June*, and above m, ſtand 3, 10, 17, 24, (31 being not in *June*.) So the 3d of *June* is the 1ſt *Monday*.

Example II. *To find the Week-day to the 19th of* September.

Under 29, and againſt *September*, ſtands S, or *Sunday*, for Anſwer.

So for the Reſt.

Ex. 1. *June* 10
Add 12
D's Age 22 Days.

Ex 2. *Nov.* 24
Add 17
41
Sub. 30
D's Age 11

Sub. 30 or 29^d, as 1ſt and 2d Col make 30 or 29.

Examples.

	New D	Full D
	Mar. 21.	Mar. 7.
	Jul. 18.	Jul. 3.
	Nov. 13.	Nov. 27.

Examples.

Againſt Jan. the Sun riſes under

	h m	
1ſt	8 5	Sun's Riſing ſub. fr. 12 is ⊙ Setting.
11th	7 56	
21ſt	7 45	

reſpectively.

Whence, the Riſing and Setting for intermediate Days are known.

Sun enters	⊙ & D Plac. at New D	Sub. or add fr. or to D South^g for her Riſ. or Sett^g. D's Pl.	Arc ∓
	th s °	s °	
Jan. ♒	19 10 2	3 0	8½
Feb. ♓	19 11 1	4 2	8¼
Mar. ♈	20 0 1	5 1	7¾
Apr. ♉	20 1 1	6 0	6¼
May ♊	20 1 29	7 11	5¼
June ♋	21 2 27	8 10	4¼
July ♌	22 3 26	9 0	4
Aug. ♍	22 4 24	9 20	4¼
Sep. ♎	22 5 23	10 19	5¼
Oct. ♏	23 6 22	0 0	6¼
Nov. ♐	22 7 21	0 29	7¼
Dec. ♑	21 8 21	1 28	8¼

Reqd. Moon's Riſing and Setting, *Nov.* 24.

D's Pl. 0^s 16°

Arc ∓ 6^h 45^m
D's Sou. 9 58

D's Riſ. 3 13
D's Set. 4 43 nearly.

N. B. Take the Arc ∓ neareſt the Moon's Place.

Subtract or add Degrees for Days before or after the Sun in a Sign, for his Place.

See P. 107, *for* D's Southing.

Eq. ⊙'s Place *April* 26.
⊙ Pl. 6^s 0°
6 Ds. + 6
6 ⊙ in ♉ 1 6

Req. D's Pl. *Nov.* 24.
D's Age 11 ✕
13° ½ = 4^s 25°
D Pl. at New D 7 21
D's mean Place *Ap.* 24, Noon 0 26

NOTES

Dom. Let. N. S. F	Jul. Per. Yr. 6478
——— O. S. B	Olympiads 2540
Golden No. 18	Found. *Rome* 2517
Epact 7	Nabonaſſar 2511
Sun's Cycle 10	Hegira 1143
Indiction 13	Gregorian 183

Feb. 3. Septuageſ.	June 6. *Corp. Chr.*
Feb. 20. Aſh-W.	Dec. 1. Advent.
Apr. 7. Eaſter.	Feb. 27. Mar. 1, 2.
May 13, 14, & 15, Rogation-Days.	May 29, 31. Jun. 1.
May 16 Aſcen.	Sep. 18, 20, 21.
May 26. Whitſ.	Dec. 18, 20, 21. Ember-days.
June 2. Trinity.	

VI. ECLIPSES, 4 Sun. 2 Moon.

Sun, Partial.	Moon, Total.
1. Feb. 19^d 11^h 3^m	1. Mar. 7^d 1^h 18^m
2. Mar. 21 1 12	2. Au. 30 3 57
3. Au. 16 3 35	Viſible.
4. Sep. 15 4 51	The Jul. Per. is more 1 than by the *French*.
inviſible. Except 3d in *Europe* viſible.	

Year of *Nabonaſſar* and Found. *Rome* are leſs 1 than by the *French*.

FINIS CORONAT OPUS.